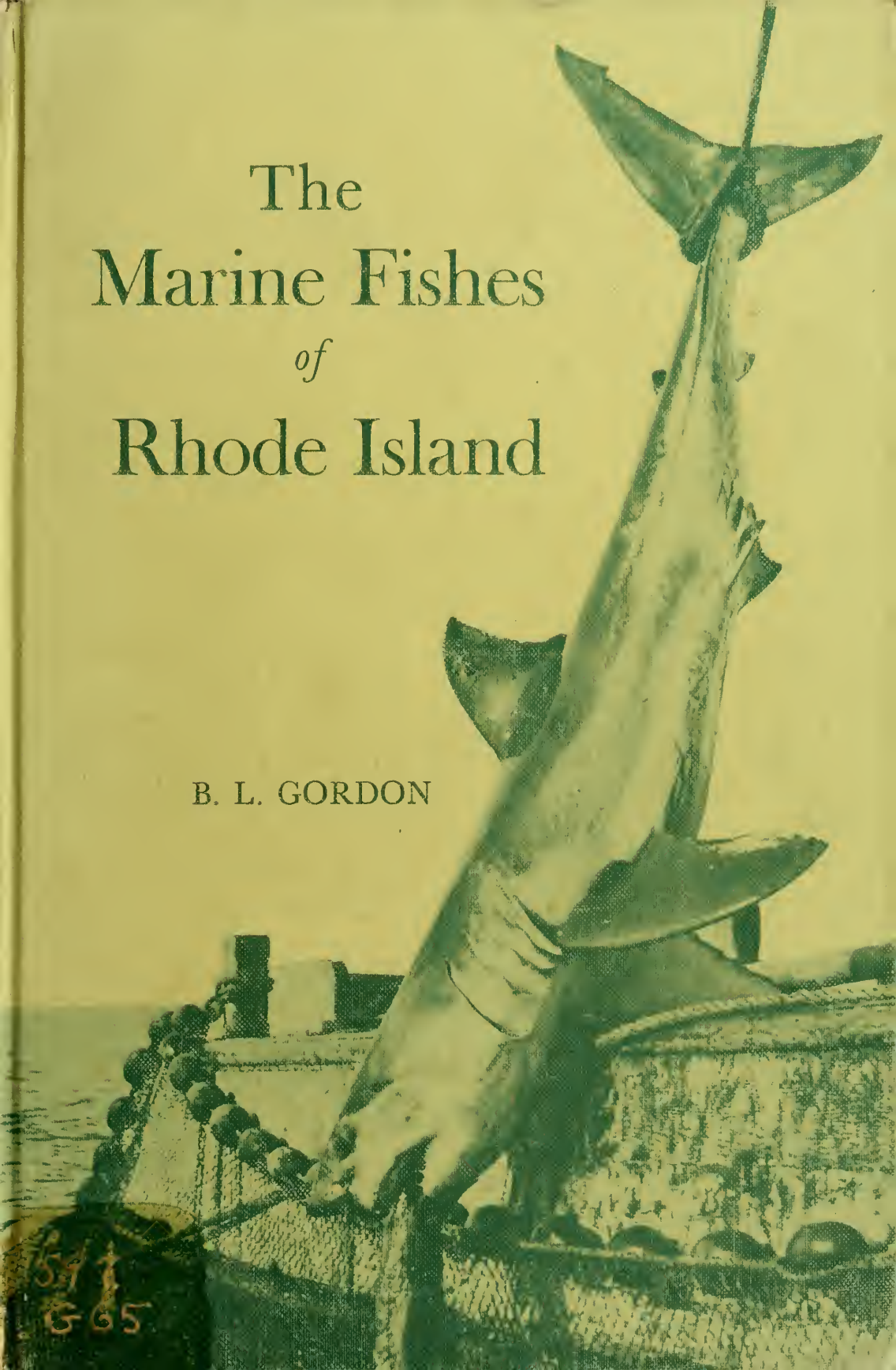


The  
Marine Fishes  
*of*  
Rhode Island

B. L. GORDON



591  
G65





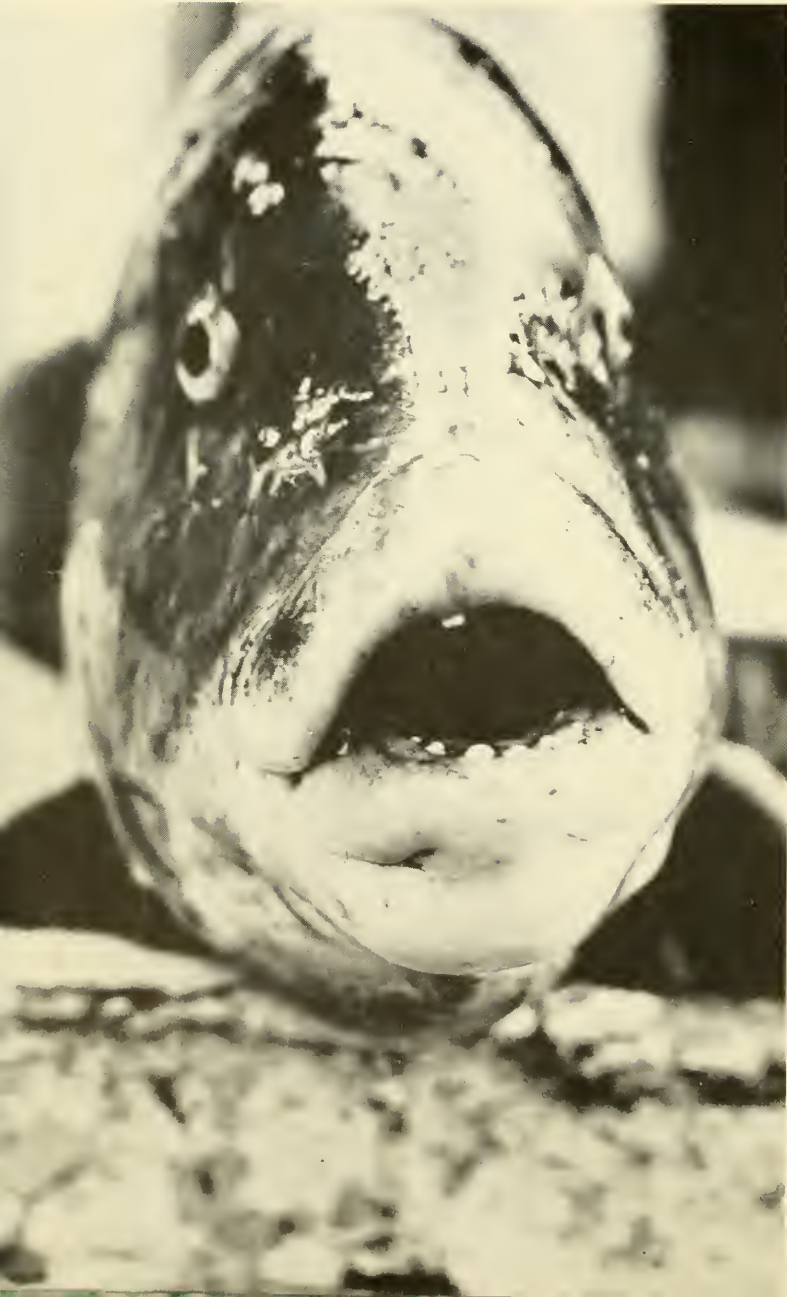






THE MARINE FISHES  
OF  
RHODE ISLAND

*A Guide Book to*



*All Photographs by*  
The Author

*Published by*

597.  
G 65

# The Marine Fishes *of* Rhode Island

BERNARD L. GORDON

Instructor of Biology  
Rhode Island College



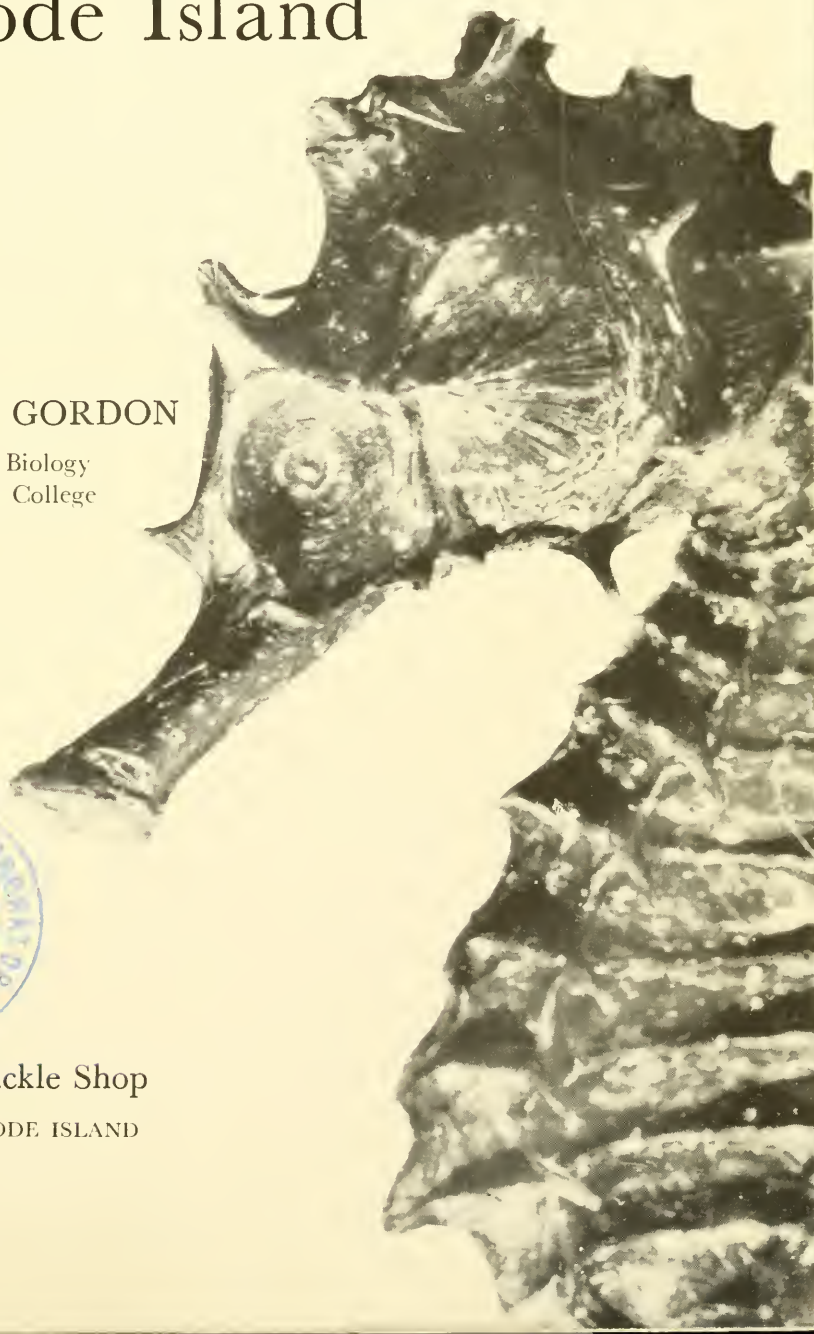
MBL/WHOI

0 0301 0017452 0



The Book & Tackle Shop

WATCH HILL, RHODE ISLAND





Copyright, 1960  
by  
Bernard L. Gordon

LIBRARY OF CONGRESS  
CATALOG CARD NUMBER 60-12691

TO THE MEMORY OF  
MY FATHER, JULIUS VICTOR GORDON,  
WHO INSTILLED IN ME AN APPRECIATION  
FOR THE WONDERS OF NATURE AND THE UNIVERSE;  
AND TO  
MY MOTHER, MOLLIE MELTZER GORDON,  
WHOSE NEVER CEASING OPTIMISM  
AND LOVE OF LEARNING  
ARE BEACONS ALONG THE HIGH ROADS AND BY ROADS  
OF MY LIFE

*Quis, nisi vidisset, pisces sub undas natare crederet.*

—LINNÆUS





## Foreword

Rhode Island is the gateway to the North and to the South for the marine fish of the Atlantic Seaboard. Its numerous inlets, bays, and estuaries offer a haven and provide all necessities for permanent habitation for numerous kinds of marine fish. Fishing is one of the most important industries of Rhode Island. It is indeed fitting that a guide book on marine fish be written by a young marine biologist, who has lived close by the sea in one of the most completely seabound states along the east coast.

This book serves a long-time need, for it is exactly fifty years since any publication describing the marine fish of Rhode Island waters has been published.

The present publication serves as an important source of valuable information for fishermen, boy scouts, nature-lovers, students, teachers, marine biologists and naturalists. It answers questions for the curious whose interest lies latent. It offers a challenge to those requiring further stimulus for motivation in their many leisure hours. It is timely written since so much current interest has been aroused in the sea through skin diving and undersea exploration. This book gives impetus to scientific study in marine fishery by its popular presentation of the many different species of marine fish. It assists in making known the many unsolved problems in marine biology, such as life histories, migrations, and ecological factors.

One of the most valuable features of this guide book is the inclusion of photographs of the species of fish described in such detail in the book. For the first time a number of species have been photographed by the young author who has proved himself such a keen observer.

A glance at the extensive bibliography indicates the thoroughness and outstanding scholarship of the author as well as a keen desire in imparting his knowledge through his prolific writing. The up-to-date bibliography alone makes this book an important addition in any library.

MARY M. KEEFFE, *Professor of Biology*  
*Rhode Island College*



## Table of Contents

Foreword by Professor Mary M. Keeffe.....	vii
I. Introduction.....	1
II. History of Rhode Island Ichthyology.....	2
III. The Survey of Rhode Island Fishes.....	4
A. Area Covered.....	4
B. Materials and Methods (collecting, preserving, recording).....	4
IV. Rhode Island Species (abundance, distribution, seasonal appearance, and economic importance).....	7
A. Class AGNATHA—Jawless Fishes.....	7
B. Class CHONDRICHTHYES—Cartilaginous Fishes.....	7
C. Class OSTEICHTHYES—Bony Fishes.....	20
V. Trends in the Fish Population.....	82
VI. Summary.....	88
VII. Bibliography.....	89
VIII. Acknowledgments.....	94
IX. Index.....	95
X. Photographs.....	105–135
Profile of the Author.....	136

## FIGURES

1. Map showing area included in this survey of marine fishes of Rhode Island.....	5
---	---

## TABLES

1. 10 year Record of Rhode Island Fish Landings.....	83
2. Marine Fishes not Included in any Previously Published List of Rhode Island Ichthyofauna.....	84
3. Fresh Water Fish Sometimes Found in Brackish Water of Coastal Rivers of Rhode Island.....	85
4. List of Fish Species not Reported in Rhode Island Waters during the Past 40 Years.....	87
5. List of Questionable Rhode Island Fishes.....	87



## LIST OF PLATES

Maneater Shark.....	Cover
Tuna Tournament.....	Front Endpaper
Herring.....	Rear Endpaper
Sea Horse.....	Title Page
Blackfish or Tautog.....	Frontispiece

### PLATE

1. Sea Lamprey.....	106
2. Mako Shark and Remora.....	106
3, 4. Maneater Shark.....	106, 107
5. Basking Shark.....	107
6. Thresher Shark.....	108
7. Hammerhead Shark.....	108
8. Dogfish.....	108
9. Angel Shark.....	109
10. Barn Door Skate.....	109
11. Stingray.....	109
12. Cow-nosed Ray.....	110
13. Mermaids Purse.....	110
14. Sturgeon.....	110
15. Herring.....	111
16. Shad.....	111
17. Menhaden.....	111
18. Smelts.....	112
19. Eel.....	112
20. Eel Trap.....	112
21. Whiting.....	113
22, 23. Codfish.....	113
24. Haddock.....	114
25. Pollock.....	114
26. Squirrel Hake.....	114
27. Summer Flounder.....	115
28. Yellowtail Flounder.....	115
29. Winter Flounder.....	115
30. Sand Dab.....	116
31. John Dory.....	116
32. Snipefish.....	116
33. Pipefish.....	117
34. Seahorse.....	117
35. Mackerel.....	118

36. Bonito.....	118
37. Tuna.....	118
38. White Marlin.....	119
39. Butterfish.....	119
40. Pilotfish.....	119
41. Lookdown.....	120
42. Threadfin.....	120
43, 44. Bluefish.....	121
45, 46, 47. Striped Bass.....	122
48. Sea Bass.....	123
49. Deep-Big Eye.....	123
50. Scup.....	124
51. Pinfish.....	125
52. Weakfish.....	125
53. Kingfish.....	125
54, 55. Tilefish.....	126
56. Boar Fish.....	126
57. Sea Raven.....	127
58, 59. Lumpfish.....	127, 128
60, 61. Flying Gurnard.....	128
62. Cunner.....	129
63, 64. Tautog.....	129
65. Butterfly Fish.....	130
66, 67, 68. Remora.....	130, 131
69. Ocean Pout.....	131
70. Toadfish.....	132
71. Orange Filefish.....	132
72. Smooth Puffer.....	133
73, 74. Blowfish.....	133
75. Burrfish.....	134
76. Anglerfish.....	134
77. Author.....	135





# I. Introduction

Fish and shellfish have played an important part in the Rhode Island economy since colonial times. Rhode Island has more than four hundred miles of shoreline, and its waters contain many species of fish. Ichthyological literature contains more than a half dozen type specimens described from Rhode Island waters. These include: *Myliobatis freminvillei* by LeSueur; *Peristedion miniatum* by Goode; *Cheilichthyes trichocephalus* by Cope; *Alectis crinitus* by Mitchill; *Pseudopriacanthus althus* by T. Gill; and *Opisthonema oglinum* by LeSueur.

Due to the unusual geographical characteristics of the state of Rhode Island and the islands within its boundaries marine fishes occur in a wide variety of physical and biological conditions. Salt marshes, estuaries, salt water ponds, rocky shoals and open sea off Block Island provide the habitats for anadromous, catadromous, benthic, oceanic, pelagic and coastal fishes.

The purpose of this book is to provide a revised and briefly annotated list of the Rhode Island marine fishes. The data for this publication was collected by the author from 1954 to 1959 while a student at the University of Rhode Island and biology instructor at Rhode Island College. An intensive survey was made of Rhode Island marine fish species recording 215 distinct species indigenous to local waters.

## II. History of Rhode Island Ichthyology

Very little has been published on the classification of marine fishes of Rhode Island. The first systematic contribution was "List of Fishes of Narragansett Bay" by H. C. Bumpus (1900). This list laid the groundwork for H. C. Tracy's "Annotated List of Fishes Known to Inhabit the Waters of Rhode Island" (1910). This list has not been revised since that time. With reference to adjacent waters Linsley (1844) published a catalogue of the fishes of Connecticut. Storer (1839) reported on the ichthyofauna of Massachusetts. T. H. Bean (1901) compiled a catalogue of the fishes of Long Island Sound. The fishes of New Jersey were recorded by Fowler (1906). Nichols and Breder (1927) published "The Marine Fishes of New York and Southern New England." Hildebrand and Schroeder (1928) followed with "Fishes of Chesapeake Bay." "The Fishes of the Gulf of Maine," Bigelow and Welch (1925) has been revised by Bigelow and Schroeder (1953). The latter two publications cover areas removed from Rhode Island, but provide useful data relating to species inhabiting the waters of Rhode Island.

The commercial fishery of Rhode Island is discussed by Goode (1884); McFarland (1911); and Ackerman (1941) and traces the development of the New England fisheries including Rhode Island's part in their growth. Recently, "Studies on the Marine Resources of Southern New England" published by the Bingham Oceanographic Laboratory of Yale University contains excellent life history details of certain fishes indigenous to Block Island Sound. Discussion of the trash fishery and pelagic fish eggs were also made. Publications by Morrow (1951), Warfel and Merriman (1944), Sanders (1952) and Merriman and Sclar (1952) are of special interest. Notes on unusual southern species occurring in Rhode

Island waters have appeared in Copeia, Arnold (1949, 1951) and Morrow (1956).

The taxonomic status of Rhode Island fishes can be obtained from: Jordan and Evermann (1896–1900), Evermann and Marsh (1902), Beebe and Tee-Van (1933), Breder (1929), and Bigelow and Schroeder, Part 1 (1948), Part 2 (1955).

A preliminary report of the Rhode Island trash fishery 1954–1955 by J. J. Graham (ms.) provides useful information on the life histories and distribution of trash fish species.

Interim Report No. 2, "Species Composition of the 1957 Industrial Trawl Fish Landings in New England" by R. L. Edwards (1958) contains considerable data on the 1957 industrial fish landings at Point Judith.

### III. The Survey of Rhode Island Fishes

#### A. AREA COVERED

The area of this investigation (Fig. 1) encompasses the eastern ends of Fisher's Island Sound and Long Island Sound, Block Island Sound and Rhode Island Sound. Coastal streams and rivers are included as far as the limit of tidal influence. The salt ponds of Rhode Island were also studied. Since many of the larger Rhode Island fishing vessels fish on the edge of the continental shelf beyond Block Island, species found in these waters are included.

#### B. MATERIALS AND METHODS

At the inception of this project five-gallon containers of ten per cent formalin were placed at the Point Judith Co-op Dock, Point Judith; Tallman and Mack Trap Dock, Newport; and Bindloss Dock, Stonington, for the preservation of unusual fish species taken by the trawl and trap fishermen off the Rhode Island coast. During the summer of 1957 additional containers were located at Clark's Dock, Jerusalem, and on the dragger *Jane Dore*. The latter location provided the greatest number of specimens.

In addition to periodic visits to the docks to observe fish unloading operations, frequent trips were made on trawl vessels as well as to the fish traps in order to collect specimens. During the summer and fall of 1957 cooperation with a group of haul seiners operating in the vicinity of Watch Hill provided some specimens. Collections were made at the mouth of the Pawcatuck River with a fifty-foot minnow seine with  $\frac{1}{4}$  inch mesh.

Through the cooperation of the Rhode Island Division of Fish and Game two gallons of rotenone were obtained and used in small tidal pools of Winnapaug Pond at Weekapaug. Several very

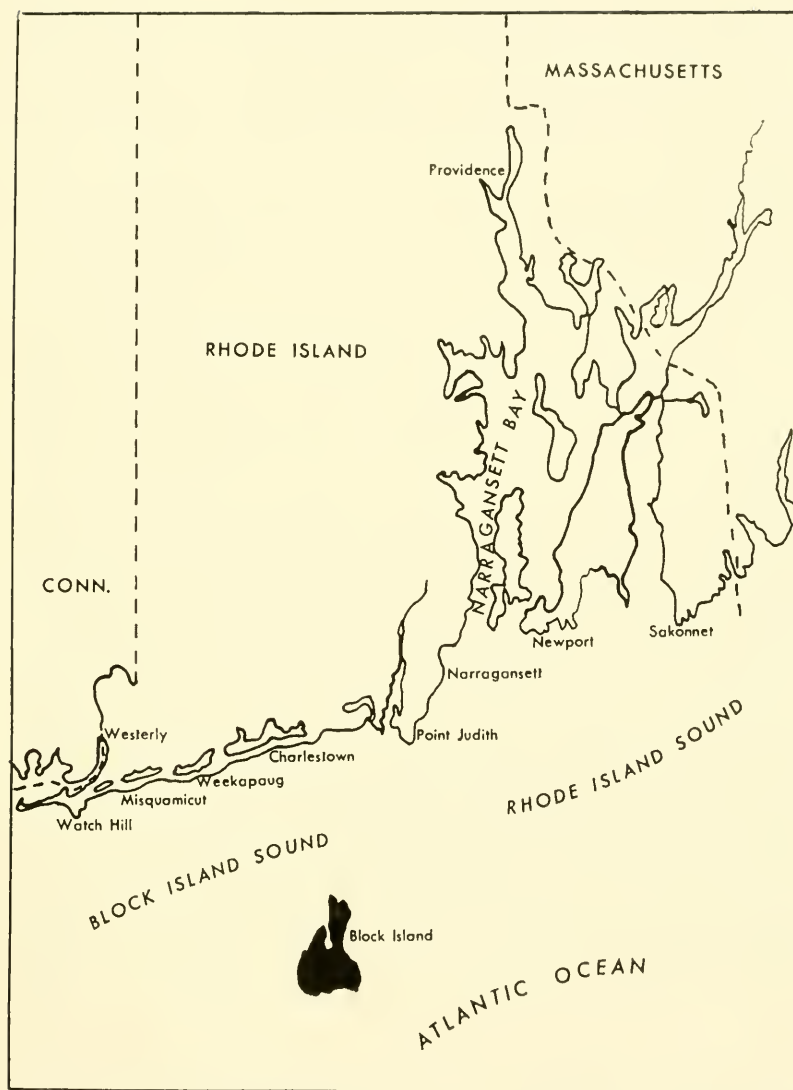


FIGURE 1. Map showing area included in survey of marine fishes of Rhode Island

uncommon specimens (*Chaetodon*, *Pseudopriacanthus*) were collected by this method.

Specimens collected by members of the Narragansett Marine Laboratory were observed and recorded along with much of the raw data collected by the United States Fish and Wildlife Service, Narragansett Bay Hurricane Barrier Control Project. Observations by J. Watson, D. Horton and S. B. Saila provided useful data for this project.

Measurements of fishes studied in this investigation were made of the total length extending from the tip of the snout to the end of the caudal fin. Measurements under six inches were made in millimeters and those over six inches in inches and feet.

The majority of the fishes collected in this survey have been preserved in labeled containers with ten per cent formalin and are located in the University of Rhode Island, Zoology Department and in the collection of the Biology Department of Rhode Island College.

Several sampling methods such as trapping, seining and rotenone were utilized in order to obtain species from diverse habitats.

Identification and taxonomic arrangement of collected specimens were established by use of the following references: Beebe and Tee-Van (1928, 1933); Berg (1947); Bigelow and Schroeder (1948, 1953 a, 1953 b); Blair et al (1957); Breder (1929); Chute (1948); Evermann and Marsh (1902); Goode and Bean (1895); Guenther and Deckart (1956); Hildebrand and Schroeder (1928); Johnson (1902); Jordan (1905, 1925); Jordan and Evermann (1896-1900, 1902); Jordan et al (1930); LaMonte (1946); Nichols and Breder (1927), Norman and Fraser (1949) and Schultz (1948).

Two hundred black and white photographs and kodachrome transparencies were made of the majority of the fish specimens collected. These illustrations are in the possession of the author.

## IV. Rhode Island Species

CLASS AGNATHA..... Jawless Fishes

SUBCLASS CYCLOSTOMATA

ORDER PETROMYZONIDA

Family Petromyzonidae

Genus *Petromyzon*

(1) *Petromyzon marinus* Linnaeus 1758

Sea lamprey, lamper eel, stone sucker

### Specimens: (PLATE 1)

Two, 8.5 and 11 inches (TL)\* were taken in an otter trawl three miles SE of Watch Hill on January 21, 1953 with a catch of sea herring and alewives. S. B. Saila reports finding one ammocoete of this species in Abbott's Run in Cumberland during the spring of 1955. Tracy mentioned that ripe lampreys were taken in Taunton River during the latter part of May, 1898.

### Economic Importance:

Virtual destruction of the lake trout fishery in the Great Lakes is due to this species. In Rhode Island waters it is relatively rare and of little importance. The flesh is edible and the larval forms are sometimes used as bait.

CLASS CHONDRICHTHYES..... Cartilaginous Fishes

SUBCLASS ELASMOBRANCHII

ORDER SELACHII

Family Carchariidae

Genus *Carcharias*

(2) *Carcharias taurus* Rafinesque 1810

Dogfish shark, sand shark, ground shark, sand tiger

---

\* total length



### **Specimens:**

Many specimens from four to eight feet (TL) were observed in the fish traps at Point Judith and Newport during June and July, 1957. Trawl vessels frequently encounter this species in Block Island Sound.

### **Economic Importance:**

At present this species is of little economic importance. Small specimens are sometimes utilized with the trash fish for fish meal. At one time this and other shark species were fished for their hide (shagrin) which was processed into leather.

Family Isuridae

Genus *Lamna*

(3) *Lamna nasus* (Bonnaterre) 1788

Porbeagle, blue shark, mackerel shark

### **Specimens:**

This species has occasionally been observed by the writer in traps at Point Judith during July and August in association with mackerel and butterfish. It is also taken by trawl vessels in Block Island Sound during the summer. Individual specimens observed ranged in size from four to eight feet (TL).

### **Economic Importance:**

This species is edible. Its flesh is white, resembling swordfish in taste and appearance. Larger specimens are frequently dressed and shipped to the New York market from Point Judith. Smaller porbeagles are cut up and placed in with the trash fish or discarded.

Genus *Isurus*

(4) *Isurus oxyrinchus* Rafinesque 1810

Mackerel shark, mako, Atlantic mako

### **Specimens: (PLATE 2)**

It is a common visitor to Block Island Sound during summer months. Six specimens were hooked on Nebraska Shoal off Charlestown and Southwest Ledge off Block Island during the 1957 United

States Atlantic Tuna Tournament. On August 24, 1957, a 12 foot mako was washed up on the rocks near the Watch Hill lighthouse. This specimen, a female, appeared to have died while giving birth because a large yolk sac was protruding from the uterus. This species is ovoviviparous, and the young are very large at birth. Positive identification of the Watch Hill specimen was established by studying the shape of the teeth. Makos finning on the surface are occasionally harpooned by swordfishermen in New England waters.

### **Economic Importance:**

Because this species is a fast swimmer and has the habit of leaping clear of the surface of the water when hooked, it is highly regarded by sports fishermen. This species is edible and is sometimes sent to market by commercial fishermen.

Genus *Carcharodon*

(5) *Carcharodon carcharias* (Linnaeus) 1758

Great white shark, maneater, white shark

### **Specimens: (PLATES 3, 4)**

On May 30, 1939, a small member of this species, about five feet long, was taken in a pound net at Sakonnet. The trap off the Point Judith breakwater contained a seven foot maneater on June 23, 1955. This fish was observed thrashing violently in the nets which contained butterfish and squid. Considerable difficulty was experienced in extricating this specimen from the trap. Five maneaters were taken in the Point Judith traps during the summer of 1956, but none were encountered here in 1957. This species is the most vicious member of the shark family on the Atlantic coast and it has been known to attack humans.

### **Economic Importance:**

Acknowledged by many as the best tasting member of the shark family, the maneater is sometimes dressed and sent to market. This species is generally avoided by commercial fishermen because of its vicious nature and large teeth.

Family Cetorhinidae

Genus *Cetorhinus*

(6) *Cetorhinus maximus* (Gunnerus) 1765

Basking shark, bone shark

**Specimens:** (PLATE 5)

This is the largest species of fish which occurs in Rhode Island waters. In European waters it has been known to reach lengths of 40 to 50 feet. During June and July, 1956, four basking sharks, ranging in size from 12 to 20 feet were captured in the floating traps at Point Judith by W. Clark. Due to their large size, these fish were released.

**Economic Importance**

During the nineteenth century there was an extensive fishery for the basking shark. It was taken by harpoon for the oil content of its liver. Today it is pursued only in the Irish Sea. The flesh is soft and not very palatable.

Family Alopiidae

Genus *Alopias*

(7) *Alopias vulpinus* (Bonnaterre) 1788

Thresher shark, thrasher, swiveltail, whiptail

**Specimens:** (PLATE 6)

This species has been described as the most common shark on the continental shelf off Block Island. It appears in May, and is most plentiful in June, remaining until autumn. On September 3, 1956, the trawl vessel *Jane Dore* captured two thresher sharks in one drag of an otter trawl net four miles SE of Watch Hill. One of the threshers was seven feet long and weighed 65 pounds; the other measured 12 feet and weighed approximately 450 pounds. This species occasionally appear in the fish traps as it feeds on most schooling fishes such as mackerel, herring and menhaden. Thresher sharks are one of the few species of fish known to attack schools of bluefish.

**Economic Importance:**

This fish is occasionally sent to market as the flesh is moderately

good. Fishermen generally consider this species a nuisance because it tends to snarl and tangle nets.

Family Orectolobidae

Genus *Ginglymostoma*

(8) *Ginglymostoma cirratum* (Bonnaterre) 1788

Nurse shark, carpet shark

#### **Specimens:**

This shark has been reported by H. S. Champlin as being taken from a pound net at Point Judith during the summer of 1920 (Nichols and Breder: 1927, p. 11). It is generally found from North Carolina to southern Brazil. Identification of this species is simple as it has a fleshy barbel at each corner of a quadrangular flap in front of the mouth. Therefore, there appears to be no reason to question the authenticity of the report.

#### **Economic Importance:**

This species has a very hard, smooth skin which is the most desirable of all shark leathers and brings the highest prices. On the islands off the southern coast of Brazil the otoliths of this species are used by local fishermen as a diuretic.

Family Scyliorhinidae

Genus *Scyliorhinus*

(9) *Scyliorhinus retifer* (Garman) 1881

Chain dogfish

#### **Specimens:**

This species is frequently taken on the tilefish grounds of the edge of the continental slope off Block Island by offshore trawlers. A member of this species was taken on October 20, 1954, in 29 fathoms off Point Judith by the dragger *William Cheseborough*. The chain dogfish is of no economic importance.

Family Triakidae

Genus *Mustelus*

(10) *Mustelus canis* (Mitchill) 1815

Atlantic smooth dogfish, smooth hound, grayfish

### **Specimens:**

This species is very common in inshore Rhode Island waters during the summer months. The smooth dogfish is the second most abundant shark species along the southern coast of New England. The spiny dogfish (p. 15) is the most numerous shark. Specimens taken locally by traps and trawlers range from one to five feet.

### **Economic Importance:**

Small specimens are utilized with the trash species. They are frequently hooked by anglers as they take squid and clam baits readily.

Family Garcharhinidae

Genus *Galeocerdo*

(11) *Galeocerdo cuvier* (LeSueur) 1822

Tiger shark, leopard shark

### **Specimens:**

This species is a casual visitor to southern New England in late summer and fall. It is common to the waters around Florida and the Caribbean. There is one record from Rhode Island, a male, 1,245 mm. (49 inches) (TL) from Newport (Harv. Mus. Comp. Zool., No. 35145). This species is brown with dark spots along its sides.

### **Economic Importance:**

This species is of no economic importance in Rhode Island waters. In southern waters where there is a shark fishery, its skin and liver are utilized.

Genus *Paragaleus*

(12) *Paragaleus pectoralis* (Garman) 1913

### **Specimens:**

One record is available. This is a type specimen, female, 651 mm. (TL) (Harv. Mus. Comp. Zool., No. 847). All that is known of the one specimen on record is that Garman obtained it from a public aquarium known as the "Aquarial Gardens" with specimens ob-

tained "off the coasts of Massachusetts and Rhode Island" (Bigelow and Schroeder 1953 a).

Genus *Prionace*

(13) *Prionace glauca* (Linnaeus) 1758

Great blue shark, blue dog

**Specimens:**

Frequently observed by trawl vessels during the summer, this species rarely strays inshore. On August 22, 1943, twenty-eight members of this species were observed in one hour at a distance from four to ten miles off Block Island. In Rhode Island waters this species ranges in size from about two to twelve feet. The blue shark is of no commercial importance at present.

Genus *Carcharhinus*

(14) *Carcharhinus milberti* (Muller and Henle) 1841

Sandbar shark, brown shark

**Specimens:**

A specimen 7.25 feet (TL), weighing 160 pounds, was taken at Breton's Reef, September, 1842 (Tracy 1910). Two or three foot specimens are occasionally taken in Newport traps during August and September. It is rather common off Rhode Island during the warmer months, occasionally entering Narragansett Bay. It has been reported by commercial fishermen off Block Island from May to November.

**Economic Importance:**

In the Florida shark fishery, it is of considerable commercial importance, but in Rhode Island waters it is usually utilized with the trash species or discarded.

(15) *Carcharhinus obscurus* LeSueur 1818

Dusky shark, shovelnose

**Specimens:**

The dusky shark frequently occurs in the Rhode Island traps. A four foot dusky shark was taken in the trap off the Point Judith

breakwater, July 11, 1957, and positive identification was established by the shape of the teeth.

**Economic Importance:**

This species is not plentiful enough anywhere along the entire Atlantic coast to be of any economic importance.

Family Sphyrnidae

Genus *Sphyrna*

(16) *Sphyrna tiburo* (Linnaeus) 1758

Bonnethead shark, shovelhead, bonnet shark

**Specimens:**

This is a tropical species generally found from North Carolina to Brazil. Bigelow and Schroeder (1953) report one stray specimen taken at Newport, one from Massachusetts Bay and six specimens about four feet long taken in Nantucket Sound during the summer of 1918.

**Economic Importance:**

Due to its scarcity in northern waters, this species is of no economic importance off the Rhode Island coast.

(17) *Sphyrna zygaena* (Linnaeus) 1758

Hammerhead shark, common hammerhead

**Specimens: (PLATE 7)**

This species occasionally occurs in Rhode Island waters and is sometimes taken by trawl fishermen from June to October. A few small specimens are taken by Newport and Point Judith trap fishermen each year. Although most specimens taken are small, Tracy (1910) mentions a female hammerhead, 9 feet 10 inches (TL) taken August 14, 1907, in a trap at the north end of Conanicut Island.

**Economic Importance:**

Although slightly more plentiful in Rhode Island waters than the bonnethead shark (p. 14), this species is of no economic importance locally.



Family Squalidae

Genus *Squalus*

(18) *Squalus acanthias* Linnaeus 1758

Atlantic spiny dogfish, dogfish, grayfish

**Specimens:** (PLATE 8)

This species is the most common member of the shark family appearing in Rhode Island waters. It is abundant during the spring, summer and fall months. This species ranges from 6.5 inches at birth to a maximum of 4 feet (Gordon 1956 f).

**Economic Importance:**

Chiefly a trash species utilized for reduction in Rhode Island, this species is sometimes filleted and sent to the New York market under the name of grayfish. In Great Britain and northern Europe this species is of considerable commercial value as a food fish. Frequently taken by hook and line, the spiny dogfish should be handled with caution since Norman (1931) states that the spine of this species has a mild poison capable of inflicting intense pain and discomfort. During 1957, 26,000 pounds of grayfish valued at \$137 were landed at Rhode Island ports.

Family Squatinidae

Genus *Squatina*

(19) *Squatina dumeril* (LeSueur) 1818

Angel shark, Atlantic monkfish

**Specimens:** (PLATE 9)

Four members of this species have been recorded from Rhode Island and vicinity. Two were recorded by Tracy (1910), from Newport and West Passage. A four-foot angel shark was taken in October, 1948, by the trawler *Eleanor* on the Mussel Bed, 6 miles SE of Point Judith, in 18 fathoms. Another was taken by the trawler *R. W. Griffin, Jr.*, January 15, 1955, in 55 fathoms, south of Block Island. The latter monkfish weighed 22 pounds and had a total length of three feet. It was described by Gordon (1955 c, 1956 n).

### **Economic Importance :**

This species is too rare to be of economic importance in Rhode Island.

### **ORDER BATOIDEI**

Family Torpedinidae

Genus *Torpedo*

(20) *Torpedo nobiliana* Bonaparte 1835

Atlantic torpedo, electric ray, numbfish, crampfish

### **Specimens:**

This species is frequently taken near Block Island and Sakonnet during the summer months, according to Bigelow and Schroeder (1953 a), and Tracy (1910). Commercial fishermen have reported to the author its infrequent appearance in Block Island Sound during the summers of 1956-57. The Atlantic torpedo is of no economic importance.

Family Rajidae

Genus *Raja*

(21) *Raja laevis* Mitchill 1817

Barndoor skate, peck-nosed skate, sharp-nosed skate

### **Specimens: (PLATE 10)**

This species is a very common skate which has been observed throughout the year in catches of Rhode Island trawlers. This is the largest species of skate found in Rhode Island waters. Specimens observed reached a length of five feet (TL) and weight of 35 pounds. This species is found in deeper waters in the summer and inshore areas in spring and fall. Description and photographs of this species occur in Gordon (1957 n).

### **Economic Importance:**

Skates are chiefly utilized as a trash species for rendering into fish meal. Occasionally they are shipped to the New York fish markets under the name of rajafish. Some fishermen have been known to cut out sections of skate wings and sell them as sea scallops.

(22) *Raja ocellata* Mitchill 1815

Big skate, spotted skate, eyed skate, winter skate

**Specimens:**

This species is very common in inshore waters during winter months. It tends to go into deeper waters in summer. More pounds of the big skate were landed in the Rhode Island trash fishery from June, 1954, to May, 1955, than any other species of skate (Graham, unpublished manuscript). Numerous specimens from two to three feet in total length were examined.

(23) *Raja eglanteria* Bosc 1802

Clearnose skate, brier skate, summer skate

**Specimens:**

This is a southern species of skate which is found in Rhode Island waters only during the summer and fall. Specimens two to three feet in total length were examined during August and September, 1957.

(24) *Raja garmani* Whitley 1939

Rosetted skate, leopard skate

Bigelow and Schroeder (1953 a, 1953 b) mention that this species is restricted to depths greater than 35–40 fathoms and is one of the most abundant skates found offshore along southern New England. The above references cite specimens taken from off of Montauk Point and off Block Island. An 11 inch leopard skate was taken May 8, 1957, off Block Island by the trawler *Dauntless*.

(25) *Raja erinacea* Mitchill 1825

Little skate, prickly skate, summer skate

**Specimens:**

This is not only the most common skate along the coast of New England, but the most familiar because of its habit of coming into shoal water (Bigelow and Schroeder 1953 a). The little skate ranks third in numerical abundance in the Rhode Island trash fishery (Graham, unpublished manuscript). This species has been observed by the writer throughout the year in the catch of Rhode Island

trawl vessels. On March 2, 1958, an egg case of this species taken four miles SE of Watch Hill, was obtained from the trawler *Old Mystic*. It contained an embryo 80 mm. (TL) with the yolk sac still attached.

(26) *Raja senta* Garman 1885

Smooth skate, smooth-tailed skate

**Specimens:**

According to Bigelow and Schroeder (1953 a, 1953 b) this species was captured at 50 to 250 fathoms off southern New England and occurs along the upper part of the continental slope in the vicinity of southern New England.

(27) *Raja radiata* Donovan 1807

Thorny skate, starry skate

**Specimens:**

This is not common in inshore waters of southern New England due to the fact that it is found exclusively at temperatures of 50° F. or less. It occurs on the edge of the continental shelf off southern New England and a specimen was taken 25 miles off the eastern end of Long Island at a depth of 32 fathoms (Bigelow and Schroeder 1953 a).

Family Dasyatidae

Genus *Dasyatis*

(28) *Dasyatis centroura* (Mitchill) 1815

Stingray, stingaree, ray

**Specimens: (PLATE 11)**

This species of stingray is common in the traps at Point Judith during June, July and August. In 1955 they were very abundant and five or six specimens were observed in one haul of the trap off the Point Judith breakwater. These rays ranged in size from four to eight feet (TL). Descriptions and photographs of these specimens can be found in Gordon (1955 i).

**Economic Importance:**

When taken in the traps, the tail is almost immediately severed as it possesses a knifelike poisonous blade near the base capable of

inflicting extremely painful injury. Large specimens are usually cut up into small pieces and sold to the industrial fish plants.

Family Gymnuridae

Genus *Gymnura*

(29) *Gymnura altavela* (Linnaeus) 1758

Butterfly ray

### Specimens:

There are three records of this species from Rhode Island. One specimen, six feet seven inches wide from Newport, was the basis for LeSueur's (1817) species *maclura*. One specimen 23 inches (TL) taken during July, 1900, in Narragansett Bay is noted by Tracy (1910). The most recent record of this rare species was a four feet wide ray taken at Point Judith in August, 1949, Arnold (1951).

Family Myliobatidae

Genus *Myliobatis*

(30) *Myliobatis freminvilli* LeSueur 1824

Bullnose ray, eagle ray

### Specimens:

The original type specimen of this species described by LeSueur was taken in 1824 from Rhode Island. Tracy (1910) mentions this species appearing in traps near Saunderstown. Fowler (1917) notes one member of this species taken at Newport.

Family Rhinopteridae

Genus *Rhinoptera*

(31) *Rhinoptera bonasus* (Mitchill) 1815

Cow-nosed ray

### Specimens: (PLATE 12)

Tracy (1910) mentions an immense school of these fishes seen off Block Island by Captain Mason of Tiverton. An immature male of this species from Newport (Harv. Mus. Comp. Zool., No. 746), 567 mm. wide, appears in Figure 107 of Bigelow and Schroeder (1953 a). On October 3, 1957, one specimen with a total length of three feet was taken by the trawler *Jane Dore* four miles south of Watch Hill.

Family Mobulidae

Genus *Manta*

(32) *Manta birostris* (Donndorff) 1798

Devil ray, manta ray, devil fish

**Specimens:**

One record of this species occurs from Rhode Island. In August, 1921, a giant manta, 19 feet wide was harpooned 10 miles off Block Island by a swordfisherman and brought to the island.

CLASS OSTEICHTHYES.....Bony Fishes

Family Acipenseridae

Genus *Acipenser*

(33) *Acipenser sturio* Linnaeus 1758

Sea sturgeon, common sturgeon

**Specimens: (PLATE 14)**

The sea sturgeon is found in Rhode Island waters from May to November. Specimens two and eight feet (TL) have been noted in local waters by the writer. A sturgeon, six feet four inches (TL) and weighing 126 pounds was captured seven miles up the Pawcatuck River below the Stillmanville Bridge by Frank Muoio of Westerly using eel spears during October, 1955. Examination of the ovaries demonstrated only a few small eggs. Photographs and description of this species are found in Gordon (1958 b).

**Economic Importance:**

Sturgeons are dressed and sent to market where they usually bring good prices. The meat is sometimes cured or smoked and the eggs are processed into caviar. During 1957, Rhode Island fishermen landed 3,698 pounds of sturgeon valued at \$557.

(34) *Acipenser brevirostrum* LeSueur 1818

Shortnose sturgeon, little sturgeon

**Specimens:**

This species is smaller and less common than the sea sturgeon. A 2.5 foot (TL) shortnose sturgeon was taken in May, 1956, in the

traps at Point Judith. A 28 inch (TL) fish, believed to be a short-nosed sturgeon, was taken by J. Watson in Narragansett Bay in the spring of 1957.

Family Siluridae

Genus *Bagre*

(35) *Bagre marinus* (Mitchill) 1815

Gafftopsail catfish

#### Specimens:

Tracy (1910) reported a specimen taken at Brenton Reef Lightship, September 16, 1898. Members of this species from Newport are found in the Powell Collection of Boston Society of Natural History.

Genus *Galeichthyes*

(36) *Galeichthyes felis* (Linnaeus) 1766

Sea catfish

#### Specimens:

Tracy (1910) states this species is rare in Rhode Island and mentions one specimen from Narragansett Bay. No date of capture or size is given. None were observed or captured during this survey.

Family Elopidae

Genus *Elops*

(37) *Elops saurus* Linnaeus 1766

Ten pounder, big-eyed herring

#### Specimens:

This herring-like fish is common in southern waters but is rare locally. Two specimens, 14 and 16 inches (TL), were taken by the trawler *Jane Dore*, October 17, 1957, three miles SE of Watch Hill. Tracy (1910) mentions a 14 inch ten pounder taken October 29, 1905, in a trap at Dutch Island Harbor, Narragansett Bay.

Genus *Tarpon*

(38) *Tarpon atlanticus* (Cuvier and Valenciennes) 1846

Tarpon, Atlantic tarpon, silver-king



### Specimens:

This fish is a rare straggler to Rhode Island waters. The last record of its appearance was on August 23, 1953, when one specimen weighing 85 pounds and two 60 pound fish were taken in traps off Ledge Road, Newport. This was the first appearance of tarpon in Newport waters since 1919, when one was taken in a trap. Tracy (1910) mentions five tarpon taken in August, 1906, from a Newport trap off Second Beach near Purgatory Point, Newport.

Family Dussumieriidae

Genus *Etrumeus*

(39) *Etrumeus sadina* (Mitchill) 1815

Round herring

### Specimens:

This species, the most slender of the herring family, is common in southern waters and is an occasional visitor to New England waters. Tracy (1910) cites a member of this species in the United States National Museum taken at Newport by S. Powell. None were observed or recorded during this survey.

Family Clupeidae

Genus *Clupea*

(40) *Clupea harengus* Linnaeus 1758

Sea herring, blue back, sardine

### Specimens: (PLATE 15)

This species was observed to appear in large schools in Block Island Sound from January to March. Considerable annual fluctuation occurs in the abundance of this species. From Table 1, page 83, it is evident that 1949 and 1952 were years of greatest abundance. During mild winters the sea herring catch declines in Rhode Island waters.

Sanders (1952) noted sea herring present in Block Island Sound from January 6 to March 15, 1951. The mature individuals formed the major portion of the herring population until early February, after which juveniles were dominant. During January and February the fish were found in the coldest water, which was a narrow

band near and parallel to the shore. They later dispersed widely as the Sound waters became warmer. Sanders also found that the most important single food organism was the copepod *Pseudocalanus minutus* which constituted more than seventy per cent of the food by number.

Specimens collected by the writer ranged from four to fifteen inches (TL).

### **Economic Importance:**

The herring is one of the most important food fishes in the world. During 1957, 296,833 pounds of sea herring were landed at Rhode Island ports. These fish were valued at \$12,892. In addition, large quantities of this species were utilized as trash fish for reduction. Young herring four to six inches long are canned as sardines. The smaller herring are usually sorted out by the fishermen as they bring higher prices. Special efforts are sometimes made to capture juvenile herring due to their attractive price.

Genus *Pomolobus*

(41) *Pomolobus mediocris* (Mitchill) 1815

Hickory shad, hickory jack, hick

### **Specimens:**

This species is common at the Point Judith traps from April through fall. Draggers take large numbers of hickory shad in Block Island Sound during spring and fall. This species is the second largest of the anadromous herrings and reaches lengths up to two feet. Most Rhode Island specimens examined ranged from 10 to 16 inches (TL).

### **Economic Importance:**

In Rhode Island, this species is usually utilized as trash fish or sold to lobster fishermen as bait for their pots. Farther south, where it is more abundant, this species is sometimes sent to market.

(42) *Pomolobus pseudoharengus* (Wilson) 1811

Alewife, sawbelly, buckie, river herring

### Specimens:

This species enters Rhode Island rivers and streams in the early spring. Large spawning runs appear in March, April and May in Pettaquamscutt River. Specimens examined on this spawning run averaged between 10 and 12 inches (TL). Females of this species average 15 mm. more in length than males of the same age according to Nichols and Breder (1927).

### Economic Importance:

Since colonial times, the spawning run of this species has been harvested with dip nets and seines. Some are smoked and marketed as buckies, others are cured in salt and vinegar for making such special products as bismark herring and rollmops. Large quantities from the middle Atlantic states are canned. Pearl essence is made from the scales and large quantities are utilized for fish meal. Fluctuations of the Rhode Island alewife fishery during the last decade are noted in Table 1, page 83. During 1957, 29,340 pounds of alewives were taken from Rhode Island waters, valued at \$242.

(43) *Pomolobus aestivalis* (Mitchill) 1815

Glut herring, blackback, blueback, greenback

### Specimens:

This species is very similar to the alewife, but is less numerous. It appears two weeks to a month later than the alewife. The glut herring has a black peritoneum, whereas the alewife has a pale peritoneum. When fresh, the dorsal surface of the glut herring appears darker than the alewife. Both species have similar spawning habits and there is usually no commercial distinction made between the glut herring and the alewife.

Genus *Alosa*

(44) *Alosa sapidissima* (Wilson) 1811

Shad

### Specimens: (PLATE 16)

Shad one to two feet (TL) have been taken in the Point Judith traps during April and May. Specimens of the same size are taken occasionally by the draggers in Block Island Sound during the

winter and early spring. Young shad have been observed in the Pawcatuck, Pettaquamscutt and Warren Rivers. The largest observed by the writer was 27 inches (TL), weighing eight pounds. It was taken in a trap off the Point Judith breakwater during May, 1956. The shad is the largest member of the herring family.

During 1957, 4,483 pounds of shad valued at \$208 were landed at Rhode Island ports. The shad is one of our better food fishes and its roe is highly prized as a delicacy. Fifty years ago shad was among the top three species of fish on the Atlantic coast in pounds landed. It has declined to thirtieth position with regard to poundage during 1957. The three major causes of the shad decline are over-fishing, pollution and erection of dams which prevent the fish from reaching their spawning grounds.

Genus *Opisthonema*

(45) *Opisthonema oglinum* (LeSueur) 1817

Thread herring, hairy-back, shad-herring

**Specimens:**

This tropical species is plentiful in the West Indies and occasionally strays to the Massachusetts coast. The type specimen of this species was taken at Newport. Tracy (1910) mentions a specimen taken by the United States Fish Commission at Newport which is in the United States National Museum. This very rare species has appeared several times in the fish traps at Newport and Point Judith during the past decade, according to the fishermen. However, no specimens were actually observed in this survey.

Genus *Brevoortia*

(46) *Brevoortia tyrannus* (Latrobe) 1802

Menhaden, bonyfish, pogey, bunker

**Specimens: (PLATE 17)**

The menhaden is the most abundant of the migratory species which visit Rhode Island waters. During 1957, 19,777,660 pounds were taken chiefly in Block Island Sound. The peak of abundance occurs in August and September. The greatest part of the catch is taken by purse seiners. Draggers and trap fishermen also land considerable quantities.

This species has been observed to spawn in local waters. When rotenone was spread in a tidal pool off Winnapaug Pond in Weekapaug, on September 19, 1957, a large quantity of three-inch juvenile menhaden were collected. A month later, rotenone in the same area demonstrated the menhaden still present, and on the average, one inch longer in length. The majority of the adult menhaden viewed in the nets and traps ranged from 10 to 12 inches (TL). Photographs and detailed description of Rhode Island menhaden appear in Gordon (1957 b).

#### **Economic Importance:**

The meal made from menhaden is used in fertilizers, animal and poultry feeds. The oil from this species is utilized in the manufacture of paint, soap, candles, printing inks and insect sprays. During 1957, more pounds of menhaden were landed at Rhode Island ports than in any previous year. The catch was 19,777,600 pounds valued at \$235,837. Because the menhaden is so oily, it is not utilized directly as a food fish. It is utilized as chum for tuna and bluefish, or for lobster bait.

Family Engraulidae

Genus *Anchoa*

(47) *Anchoa mitchilli* (Cuvier and Valenciennes) 1848

Anchovy

#### **Specimens:**

This small species, ranging in size from two to three and a half inches (TL) is found in Rhode Island waters in coves, bays and river mouths from May to October. Numerous specimens were collected at the mouth of the Pawcatuck River in a minnow seine during July and August, 1957. This species was also found September 19, 1957, at Weekapaug, using rotenone.

#### **Economic Importance:**

In Europe, anchovies are salted and canned for use as hors d'oeuvres. In this country, they are of slight importance, a few being canned and the rest being used as baitfish. During 1957, 7,173 pounds of anchovies were recorded from Rhode Island. They were valued at \$180.

(48) *Anchoa hepsetus* (Linnaeus) 1758

Striped anchovy

**Specimens:**

This species is similar to *Anchoa mitchilli*, but has a bright silvery band along the side. Tracy (1910) mentions a one and a half inch specimen taken in Narragansett Bay in November, 1898. On August 8, 1957, D. Horton captured 30 members of this species in a minnow seine in upper Pettaquamscutt River, according to Horton (1958).

Family Salmonidae

Genus *Salvelinus*

(49) *Salvelinus fontinalis* (Mitchill) 1815

Brook trout, sea trout, salter

**Specimens:**

Although chiefly a fresh water species, brook trout occasionally head down coastal streams and rivers into salt water. Brook trout have been recorded from the tidal regions of the Pawcatuck and Pettaquamscutt Rivers. Because of their scarcity in salt water, they are of no economic importance in the marine environment. On October 23, 1956, a mature male brook trout, 12.5 inches (TL) was caught at Green Hill pond with fyke net by S. B. Saila.

Genus *Salmo*

(50) *Salmo salar* Linnaeus 1758

Atlantic salmon, sea salmon

**Specimens:**

This species is a rare visitor to Rhode Island waters. One or two Atlantic salmon are taken each summer in the fish traps at Point Judith. On June 11, 1957, a 26 inch (TL) specimen, weighing eight pounds, was taken in the trap off the Point Judith breakwater.

Family Osmeridae

Genus *Osmerus*

(51) *Osmerus mordax* (Mitchill) 1815

Smelt

**Specimens: (PLATE 18)**

This anadromous species which was once plentiful in all the coastal rivers and streams of the state is now restricted to the Pawcatuck River, Taunton River and a small area of Mount Hope Bay. Their spawning migrations occur in the spring. On March 11, 1958, smelt were first observed and captured in the Pawcatuck River on their annual run. They ranged in size from 8 to 12 inches (TL). Additional information and photographs of this species can be found in Gordon (1958 a).

**Economic Importance:**

This species has widespread appeal as a table fish.

Family Synodontidae

Genus *Synodus*

(52) *Synodus foetens* (Linnaeus) 1766

Lizard fish, sand pike

**Specimens:**

A nine inch (TL) lizard fish was taken by the trawler *Jane Dore* on October 10, 1957, six miles east of Watch Hill Point. A lizard fish was taken by J. Watson on October 8, 1957, NW of Hope Island in Narragansett Bay. This is a rare straggler from southern waters, and a few are taken each fall in Rhode Island waters.

Family Esocidae

Genus *Esox*

(53) *Esox niger* (LeSueur) 1818

Eastern pickerel, chain pickerel

**Specimens:**

The pickerel is a fresh water species but it has been recorded from salt water environments. During 1957, D. Horton found pickerel in the upper Pettaquamscutt River with the salinity ranging from seven to ten parts per thousand (Horton 1958).

Family Anguillidae

Genus *Anguilla*



(54) *Anguilla rostrata* (LeSueur) 1817

Eel, common eel

**Specimens:** (PLATES 19, 20)

This catadromous species is common in the fresh, salt and brackish waters of Rhode Island. It is found in all of the coastal rivers and salt ponds of the state. During the spring, there is a migration of young eels two and three inches long up the coastal rivers. Numerous eels were collected in the Pawcatuck River and Little Narragansett Bay in eel pots, from May to October, 1957. These ranged in size from six inches to three feet (TL). Photographs and description of Rhode Island eels appear in Gordon (1957 i).

**Economic Importance:**

The eel is utilized chiefly as a baitfish for striped bass and bluefish. Eels are sometimes sold as food fish. In 1957, 869 pounds of eels valued at \$196 were landed at Rhode Island ports.

Genus *Conger*

(55) *Conger oceanica* (Mitchill) 1818

Conger eel, sea eel

**Specimens:**

This species is taken by trap fishermen and inshore and offshore trawlers. There are numerous records of this species from Rhode Island, ranging from three to six feet (TL). This species is much larger than the common eel and is frequently observed by skin divers.

**Economic Importance:**

During 1957, 24,443 pounds of conger eel valued at \$690 were landed at Rhode Island ports.

Family Alepisauridae

Genus *Alepiasaurus*

(56) *Alepiasaurus ferox* Lowe 1833

Lancetfish, handsawfish

**Specimens:**

This is a rare oceanic species. Bigelow and Schroeder (1953 b) describe a five and a half foot lancetfish caught alive in the surf on Block Island, March 12, 1928. It was reported by Elizabeth Dickens.

Family Poeciliidae

Genus *Fundulus*

(57) *Fundulus heteroclitus* (Linnaeus) 1766

Common mummichog, killifish, killy, mud minnow,  
mummy

**Specimens:**

This species is very common in salt marshes, brackish water, bays and inlets. Many specimens were captured throughout the year in minnow traps.

**Economic Importance:**

It is utilized chiefly as a baitfish for summer flounder.

(58) *Fundulus majalis* (Walbaum) 1792

Striped mummichog

**Specimens:**

This species is similar in characteristics to *Fundulus heteroclitus*. It was observed by the writer in brackish waters at Watch Hill and Weekapaug.

(59) *Fundulus diaphanus* (LeSueur) 1817

Fresh-water killifish

**Specimens:**

This species is found in brackish water streams close to salt water. Horton found this species abundant in Pettaquamscutt River, according to Horton (1958).

Genus *Cyprinodon*

(60) *Cyprinodon variegatus* Lacepede 1803

Sheepshead minnow, broad killyfish

**Specimens:**

This southern species of minnow is very common in many of Rhode Island's salt ponds. Specimens one to three inches (TL) were

collected in abundance in Winnapaug, Massachaug and Little Massachaug Ponds. Males of the species assume bright blue and orange colors during mating season.

Family Belonidae

Genus *Tylosurus*

(61) *Tylosurus marinus* (Walbaum) 1792

Silver gar, garfish, billfish

**Specimens:**

This gar is an occasional visitor to Rhode Island waters. Tracy (1910) reports the capture of this species at Rocky Point, July 26, 1897; Wickford, August 28, 1905; and Cornelius Island, August 13, 1909. The writer collected two specimens, 18 inches (TL), from Clark's trap at Point Judith, on May 9, 1957. These are believed to be the earliest appearance records for this species in Rhode Island waters.

Genus *Ablennes*

(62) *Ablennes hians* (Cuvier and Valenciennes) 1846

Garfish, flat needlefish

**Specimens:**

This is a tropical species which resembles silver gar. A 14 inch specimen was taken by use of rotenone at Weekapaug on September 19, 1957.

Family Hemiramphidae

Genus *Hyporhamphus*

(63) *Hyporhamphus unifasciatus* (Ranzani) 1842

Halfbeak, skipjack

**Specimens:**

This species is in coastal waters during the summer. Specimens 8 to 12 inches (TL) were observed in Point Judith traps during July, 1957. Halfbeaks are found during late summer and fall in Newport traps. This species is sometimes used as a baitfish.

Genus *Euleptorhamphus*

(64) *Euleptorhamphus velox* (Poey) 1867

**Specimens:**

Tracy (1910) cites a member of this rare West Indian species taken at Newport by a Mr. Brown.

Family Scomberesocidae

Genus *Scomberesox*

(65) *Scomberesox saurus* (Walbaum) 1792

Needlefish, billfish, saury

**Specimens:**

This billfish is common in the Newport and Point Judith traps during July and August. Specimens from 8 to 16 inches (TL) were examined.

Family Exocoetidae

Genus *Parexocoetus*

(66) *Parexocoetus mesogaster* (Bloch) 1795

Short-winged flyingfish, blackwing

**Specimens:**

Tracy (1910) mentions a specimen of five and a half inches (TL) from Newport. It is located in the Museum of the Academy of Natural Sciences at Philadelphia.

Genus *Exocoetus*

(67) *Exocoetus speculiger* (Linnaeus) 1758

Flying fish

**Specimens:**

Tracy (1910) reports a specimen in the United States National Museum which was taken at Block Island in August, 1874.

Genus *Cypselurus*

(68) *Cypselurus heterurus* (Rafinesque) 1810

Flying fish, single-bearded flying fish

**Specimens:**

Tracy (1910) cites a specimen from Block Island mentioned by Goode.

(69) *Cypselurus furcatus* (Mitchill) 1815

Flying fish

**Specimens:**

Tracy (1910) mentions two specimens from Newport five and a half inches and six inches (TL) in the Museum of the Academy of Natural Sciences at Philadelphia.

(70) *Cypselurus gibbifrons* (Cuvier and Valenciennes) 1846

Blunt-nosed flying fish

**Specimens:**

Only two known specimens are on record; one taken by Samuel Powell at Newport according to Tracy (1910).

Family Merlucciidae

Genus *Merluccius*

(71) *Merluccius bilinearis* (Mitchill) 1814

Whiting, silver hake, frostfish

**Specimens: (PLATE 21)**

The whiting is a permanent resident of Rhode Island waters and appears to be most abundant in late summer and fall. Graham (ms.) states that during the spring, large adult whiting moved inshore while young sometimes moved offshore. During winter months, small groups of whiting may get stranded by a receding tide on sandy beaches while chasing small baitfish.

Specimens of whiting observed by the writer ranged from 6 to 20 inches.

**Economic Importance:**

Graham states that the whiting is the leading inshore species of trash fish. It also was the most numerous trash species in his 1954-5 study of the Rhode Island trash fishery. Edward's data shows whiting or silver hake as the leading trash fish species landed at Point Judith in 1957.

Family Gadidae

Genus *Gadus*



(72) *Gadus callarias* Linnaeus (1758)

Cod, rock cod

**Specimens:** (PLATE 22, 23)

This cold water species is found in inshore Rhode Island waters in late fall, winter, and early spring. In the summer, cod move out to offshore cooler waters. The Rhode Island cod fishery is most intensive during the winter months when sizeable catches are made by the trawlers off the sandy beaches and shoal areas. During 1955, cod were present in the area of the Point Judith breakwater until May 30. A 40 inch (TL), 17 pound cod was taken in the traps at this time. Hook and line fishermen find late October and November productive months for the fall run of cod.

**Economic Importance:**

The cod is one of the important species in the Rhode Island winter fishery. During 1957, 558,903 pounds of cod were landed at Rhode Island ports.

Genus *Microgadus*

(73) *Microgadus tomcod* (Walbaum) 1792

Tomcod, frostfish

**Specimens:**

This small coastal fish is present all year in Rhode Island waters. It is taken by trawlers, traps and anglers. During the winter months it is present in inshore waters and coastal streams. Specimens collected ranged from 8 to 14 inches. A 10-inch tomcod taken in November, 1956, examined by J. E. Watson, contained six parasitic copepods, *Lernaenicus radiatus* (LeSueur). Due to its small size and the small landings, this edible fish is not of great economic importance.

(74) *Melanogrammus aeglefinus* (Linnaeus) 1758

Haddock

**Specimens:** (PLATE 24)

This cold water species is similar to the codfish in habits. During the winter months, good catches of haddock are made by the trawl

fleet off Block Island. Haddock from Block Island Sound examined in February and March, 1957, ranged from 14 to 35 inches (TL).

**Economic Importance:**

During 1957, 109,555 pounds of haddock valued at \$7,019 were landed at Rhode Island ports.

Genus *Pollachius*

(75) *Pollachius virens* (Linnaeus) 1758

Pollock, Boston bluefish

**Specimens: (PLATE 25)**

Similar in migratory habits to the cod, but a more active species, the pollock chases baitfish at all levels. Sizeable schools appear during spring migration in Block Island Sound. Large spring runs are evident in May off Newport, Point Judith and Watch Hill. A record pollock, 34 inches (TL) and weighing 16 pounds was taken off Watch Hill Reef on June 20, 1950, by G. A. Albrecht. Pollock observed included three fish ranging in weight from five to nine pounds taken May 30, 1953, at Catumb Reef, Watch Hill. On May 30, 1955, a 28-inch pollock (TL) weighing five pounds was speared by S. Isaacson, 200 yards off the west side of the Watch Hill lighthouse.

**Economic Importance:**

During 1957, 7,029 pounds of pollock valued at \$213 were landed at Rhode Island ports.

Genus *Urophycis*

(76) *Urophycis tenuis* (Mitchill) 1815

White hake, ling, Boston hake

**Specimens:**

White hake are abundant in Block Island Sound during spring, summer and fall. They are taken by trawlers and utilized chiefly as a trash species. Specimens observed ranged from 6 to 27 inches (TL). During 1957, 25,827 pounds of white hake valued at \$744 were landed at Rhode Island ports for human consumption.

(77) *Urophycis chuss* (Walbaum) 1792

Red hake, ling, squirrel hake



**Specimens: (PLATE 26)**

This is the most abundant of the hake species in Rhode Island waters. Red hake are the leading trash fish species from offshore grounds and the number two species in the trash fishery with regard to number of individuals. In the early spring, red hake are first taken in "30 fathom hole" south of Block Island and by mid spring they are concentrated in large schools midway between Block Island and Montauk Point. Specimens observed ranged in size from 4 to 25 inches. During 1957, 28,966 pounds of red hake valued at \$637 were landed at Rhode Island ports for human consumption.

(78) *Urophycis regius* (Walbaum) 1792

Spotted hake, king hake

**Specimens:**

This species occurs in Rhode Island waters during late summer and fall. It is similar in habits to the other hakes, but is not as abundant. It occurs in Narragansett Bay and in the traps at Point Judith and Newport.

Genus *Enchelyopus*

(79) *Enchelyopus cimbrius* (Linnaeus) 1766

Four-bearded rockling

**Specimens:**

A deep water fish slightly resembling the hakes, this species sometimes straggles into inshore waters. Tracy (1910) mentions specimens taken by the *Fish Hawk* in 12.5 fathoms in Narragansett Bay and young specimens from Newport described by A. Agassiz. This species is not plentiful enough to be of any economic importance. Edwards (1958) mentions approximately 7,000 pounds of this species in 1957 industrial fish landings.

Genus *Brosme*

(80) *Brosme brosme* (Muller) 1776

Cusk, tusk

**Specimens:**

This is a solitary deep water fish which is not too common. Tracy

(1910) records a specimen taken at Newport. Bigelow and Schroeder (1953 b) mention this species is rare in southern New England waters.

Family Hippoglossidae

Genus *Hippoglossus*

(81) *Hippoglossus hippoglossus* (Linnaeus) 1758

Halibut

#### Specimens:

This northern water food fish is an uncommon stray into Rhode Island waters during winter and spring. A few are taken each year by trawlers off Block Island. This species is the largest of the flat fish family. Tracy (1910) mentions an 80 pound halibut taken off Watch Hill on May 1, 1876. On April 16, 1900, a 100 pound halibut was brought into Newport. During 1956, 99 pounds of halibut valued at \$27 were landed at Rhode Island ports.

Genus *Hippoglossoides*

(82) *Hippoglossoides platessoides* (Fabricius) 1780

Dab, rough dab, American dab, Canadian plaice

#### Specimens:

This species is common in North America deep water to southern New England. It approaches Newport and Block Island in winter months and is taken over sandy and mud bottoms by trawlers.

#### Economic Importance:

The dab is an excellent food fish. During 1956, 53,995 pounds of dab valued at \$5,453 were landed at Rhode Island ports.

Family Paralichthyidae

Genus *Paralichthys*

(83) *Paralichthys dentatus* (Linnaeus) 1766

Summer flounder, fluke, doormat, chicken halibut

#### Specimens: (PLATE 27)

The summer flounder is the largest member of the flounder family common in Rhode Island waters. During the warmer months of the year between May and October, this species is taken in com-

paratively shallow water, between one and twenty fathoms. With the coming colder water the fluke move out beyond the 20 fathom line and down to 100 fathoms according to Ginsberg (1952).

Fluke, which are more plentiful than the blackback flounder in the summer months, are taken in sizeable amounts by trawlers, traps and sport fishermen. Summer flounder examined ranged in size from 11 to 32 inches (TL). Fluke are plentiful during the summer months in the tidal channels of the salt ponds. On August 14, 1958, a 16-pound summer flounder was caught by C. Martorelli at Beavertail light.

#### **Economic Importance:**

The summer flounder is one of the important food fishes found in Rhode Island waters. The meat is of excellent quality and highly regarded. During 1957, 1,484,499 pounds of fluke, valued at \$256,934, were landed at Rhode Island ports.

- (84) *Paralichthys oblongus* (Mitchill) 1815  
Four-spotted flounder

#### **Specimens:**

This flounder occurs in waters from 5 to 15 fathoms during spring and summer. It is not as large nor as abundant as the summer flounder. This species possesses four prominent spots on the eyed side of the body which makes it distinct from other Rhode Island flounders. Fish ranging from 7 to 12 inches (TL) were examined from Block Island Sound.

#### **Economic Importance:**

This is a fair table fish, but due to its small size, it is usually treated as a trash species.

- Family Pleuronectidae  
Genus *Limanda*  
(85) *Limanda ferruginea* (Storer) 1839  
Yellowtail, rusty dab

#### **Specimens: (PLATE 28)**

The yellowtail is a deep water flounder usually found in depths

of from 20 to 40 fathoms. On occasion they may stray inshore to shoaler waters. The yellowtail is most abundant during the month of December, but it is taken by offshore trawlers throughout the year. Yellowtails 13 to 16 inches (TL) were taken on December 8, 1953, six miles SE of Watch Hill by the trawler *Jane Dore*.

### **Economic Importance:**

The yellowtail is second in importance among the flounders taken by Rhode Island commercial fishermen with regard to poundage landed and dollar value. During 1957, 2,229,930 pounds of yellowtails, valued at \$213,427, were recorded at Rhode Island ports.

Genus *Pseudopleuronectes*

(86) *Pseudopleuronectes americanus* (Walbaum) 1792

Winter flounder, blackback flounder, flatfish

### **Specimens: (PLATE 29)**

This is the most important species of the flounder family inhabiting Rhode Island waters. Investigations by S. Saila (unpublished ms.) have shown that the spawning season of this valuable sport and commercial fish is at its height in Ninigret Pond in mid February. Migration into the salt ponds begins in the fall and the exodus in late winter and early spring. This year-round resident migrates offshore in the spring and summer and inshore during the fall. During late summer and fall the trawlers make their largest catches of this species. The blackback is a bottom dwelling fish and provides considerable sport for anglers in the spring and fall.

### **Economic Importance:**

The blackback is one of the thickest and meatiest of the flounders and is highly regarded as a food fish. Anglers seek this fish from bridges and channels along tidal waters with hooks baited with clam worms (*Nereis*), clam, or squid. The blackback is the first in importance among the flounders by weight in the commercial landings of Rhode Island. During 1957, 2,687,066 pounds valued at \$183,165 were unloaded at Rhode Island ports.

Genus *Liopsetta*

(87) *Liopsetta putnami* Gill 1864

Smooth flounder, eel-back flounder, plaice

**Specimens:**

Bigelow and Schroeder (1953 b) state that this is an arctic-boreal species with stray specimens from as far south as Providence, R. I. Tracy (1910) mentions a specimen in the Museum of Comparative Zoology which came from Providence. This species is plentiful in northern New England, but rare in Rhode Island waters. It reaches a maximum length of 12 inches (TL) and a weight of 1.5 pounds, according to Breder (1929).

Genus *Glyptocephalus*

(88) *Glyptocephalus cynoglossus* Linnaeus 1758

Gray sole, witch flounder, Craig flounder

**Specimens:**

This is a moderately deep water species which occurs off southern New England in water from 31 to 150 fathoms deep. Rhode Island offshore trawlers catch sizeable amounts of the gray sole in May and June.

**Economic Importance:**

During 1957, 34,268 pounds of gray sole valued at \$4,091 were landed by Rhode Island commercial fishermen.

Family Bothidae

Genus *Lophopsetta*

(89) *Lophopsetta maculata* (Mitchill) 1814

Sand flounder, sand dab, windowpane, sundial

**Specimens: (PLATE 30)**

This species is present the year round in Rhode Island waters from the shoreline to a depth of 30 fathoms. This is a very thin flatfish and it has received the name windowpane because when held up to the light you can see through it. Although edible, it is not usually utilized as a food fish and is utilized in the industrial fishery.

Genus *Citharichthys*

(90) *Citharichthys arctifrons* (Goode) 1880

Gulf stream flounder

**Specimens:**

Bigelow and Schroeder (1953 b) mention over one hundred of this species trawled by the *Albatross III* off Rhode Island on May 13, 1950, at 41 to 50 fathoms. A six-inch specimen was collected on April 20, 1957, from the trawler *Dauntless* off Block Island. The maximum length of this species is seven inches, according to Bigelow and Schroeder (1953 b). Because of its small size, it is of no economic importance.

Genus *Achirus*

(91) *Achirus fasciatus* Lacepede 1803

Hogchoker, sole, black flatfish

**Specimens:**

This small flatfish is taken occasionally throughout the year in Rhode Island waters. It reaches a maximum length of about eight inches (TL) but most individuals observed ranged from four to six inches (TL). It has been reported from Ninigret Pond, Pettaquamscutt River, Newport and Narragansett Bay. The hogchoker is of no economic importance.

Family Zeidae

Genus *Zenopsis*

(92) *Zenopsis ocellata* (Storer) 1858

John Dory, American John Dory

**Specimens: (PLATE 31)**

Three specimens of this deep water fish were obtained from off Block Island in 1957. On April 20, 1957, 8 and 11 inch (TL) specimens were obtained from the trawler *Dauntless* off Block Island. A 14-inch (TL) John Dory was obtained on October 26, 1957, from the trawler *Theresa* off Block Island. This species is of no economic importance in Rhode Island.

Family Macrorhamphosidae

Genus *Macrorhamphosus*

(93) *Macrorhamphosus scolopax* (Linnaeus) 1758

Snipe fish, snipefish

**Specimens:** (PLATE 32)

This species is widespread off the coast of Morocco in the eastern Atlantic, but is very rare in the region of the western Atlantic. Bigelow and Schroeder (1953 b) state that the few records from the western Atlantic have all been within the limits of the Gulf of Maine and that the few they had seen were about 4 inches long. On March 20, 1957, a 135 mm. (TL) snipefish was taken by the trawler *Dauntless* on the edge of the continental shelf off Block Island. This specimen is now number 39,926 in the fish collection at the Museum of Comparative Zoology at Harvard University. It appears to be the largest member of this species from the western North Atlantic. It is also a new southern record for this species in the western Atlantic.

Family Atherinidae

Genus *Menidia*

(94) *Menidia menidia* (Linnaeus) 1766

Silverside, white-bait, shiner, sperling

**Specimens:**

This small silvery fish is common throughout the year in salt ponds and brackish water. Numerous specimens from three to six inches (TL) were collected at Watch Hill with minnow traps, and at Weekapaug with rotenone. The silverside is sometimes used as a baitfish.

(95) *Menidia beryllina* (Cope) 1866

Waxen silverside, tide-water silverside

**Specimens:**

This species is very similar in characteristics to *Menidia menidia* except it has only about 17 or 18 soft rays in the anal fin, while *Menidia menidia* has about 23. Specimens three to five inches (TL) were taken in Winnapaug Pond in September, 1957.



Family Mugilidae

Genus *Mugil*

(96) *Mugil cephalis* Linnaeus 1758

Mullet, striped mullet, jumping mullet

**Specimens:**

The common mullet is a southern fish which strays into New England waters during the summer and fall. It is taken in Point Judith traps in July and is very common in Newport traps in the fall. It was recorded in Ninigret Pond and Winnapaug Pond during September, 1956. Specimens examined ranged from four to eight inches (TL). Horton recorded this species in Pettaquamscutt River on July 2, 1957, August 8, 1957, and October 10, 1957.

(97) *Mugil curema* Cuvier and Valenciennes 1836

Silver mullet, white mullet

**Specimens:**

This species is similar in characteristics to *Mugil cephalis* but it lacks stripes and it is slightly smaller. During late summer and fall, specimens occur in Narragansett Bay, Newport and southern Rhode Island. A six-inch (TL) specimen was taken on July 28, 1956, at Napatree Point using a minnow seine.

Family Sphyraenidae

Genus *Sphyraena*

(98) *Sphyraena guachancho* Cuvier and Valenciennes 1829

Barracuda

**Specimens:**

Although this species is rare north of Florida, Tracy (1910) records an eight-inch specimen taken near Wickford.

(99) *Sphyraena borealis* DeKay 1842

Northern barracuda

**Specimens:**

The northern barracuda is an occasional visitor to Rhode Island waters during the summer months. An eight-inch (TL) specimen was collected by D. Horton in Pettaquamscutt River on July 2.

1957. Northern barracudas with 11 and 14 inch (TL) were taken by trawlers *Irene and Walter* and *Jane Dore* in Block Island Sound during September, 1957. There are two preserved specimens of this species in the collection of the Narragansett Marine Laboratory taken from Narragansett Bay in 1937 and 1940.

Family Gasterosteidae

Genus *Pungitius*

(100) *Pungitius pungitius* (Linnaeus) 1758

Nine-spined stickleback

**Specimens:**

This species is found in brackish and weedy estuarine waters of the state. It reaches three inches (TL). It is not as common as other sticklebacks. Specimens were collected in Winnapaug Pond by the author.

Genus *Gasterosteus*

(101) *Gasterosteus aculeatus* (Linnaeus) 1758

Three-spined stickleback, common stickleback

**Specimens:**

This species is a year-round resident of Massachaug, Little Massachaug, and Winnapaug Ponds. Specimens collected ranged from two to three inches (TL). Horton collected this species in Pettaquamscutt River on January 27 and 30, 1958.

(102) *Gasterosteus wheatlandi* (Putnam) 1867

Two-spined stickleback

**Specimens:**

This species is very common in brackish water. Numerous specimens were collected by the author throughout the year in Little Massachaug Pond, Watch Hill.

Genus *Apettes*

(103) *Apettes quadracus* (Mitchill) 1815

Four-spined stickleback

### Specimens:

This species was observed throughout the year in Little Massachusetts Pond, Watch Hill. It was also collected from Winnapaug Pond by using rotenone.

Family Syngnathidae

Genus *Syngnathus*

(104) *Syngnathus fuscus* Storer 1839

Pipefish

### Specimens: (PLATE 33)

The author found this species very common among eelgrass in salt and brackish water during the summer and fall. Numerous specimens ranging from 6 to 11 inches (TL) were collected at Weekapaug, Misquamicut, and Watch Hill during the summer of 1957. A 46 mm. larval pipefish was taken one and one half miles from the Rhode Island coast on July 16, 1944, according to Merri-man and Sclar (1952). Photographs and a description of a pipefish found in Little Narragansett Bay appear in Gordon (1956 m). The pipefish is of no economic importance.

Family Hippocampidae

Genus *Hippocampus*

(105) *Hippocampus hudsonius* DeKay 1842

Seahorse

### Specimens: (PLATE 34)

The seahorse was observed by the writer to be common in the eelgrass and seaweed in the late summer and fall of 1955. Bay scallop (*Pecten irradians*) fishermen captured many seahorses during that year. Since 1955, the seahorse has been very scarce in Rhode Island waters. A gravid female, six inches (TL) was observed during September, 1955. The seahorse fluctuates greatly in abundance in Rhode Island waters during different years.

Family Fistulariidae

Genus *Fistularia*

(106) *Fistularia tabacaria* Linnaeus 1758

Cornetfish, trumpet-fish

### Specimens:

Several specimens of this rare West Indian species were collected by the author in 1957. Three trumpet-fish, 260 mm., 292 mm., and 304 mm. (TL) were obtained from John Ropes who captured them at Pettaquamscutt River, on August 6, 1957, and August 15, 1957. A 380 mm. (TL) cornetfish taken five miles east of Watch Hill on October 2, 1957, was obtained from the trawler *Jane Dore*.

Family Scombridae

Genus *Scomber*

(107) *Scomber scombrus* Linnaeus 1758

Mackerel, tinkers

### Specimens: (PLATE 35)

This migratory species has been observed by the writer to approach the coast in the spring and to move offshore into deeper water in the fall. During May and June of 1956 and 1957, schools of small mackerel, 8 to 12 inches (TL), were taken in the traps at Point Judith. Slightly larger mackerel, 12 to 15 inches (TL), were taken off Watch Hill during July and August, 1957, by trollers. The largest mackerel are those taken in waters around Block Island in late summer, reaching 20 inches (TL). Mackerel are captured by trap fishing, otter trawl, purse seine, and trolling silvered metal jigs.

### Economic Importance:

The mackerel is an important food fish. During 1957, 96,101 pounds of mackerel, valued at \$14,863, were landed by Rhode Island fishermen.

Genus *Pneumatophorus*

(108) *Pneumatophorus colias* (Gmelin) 1789

Chub mackerel, hardhead, bullseye

### Specimens:

Closely resembling the common mackerel, this species differs from *Scomber scombrus* by possessing an air bladder, larger eyes and slightly smaller size. An irregular summer visitor, this species

has been observed by the writer in the traps at Point Judith and Newport during June and July, 1957. Due to its very close resemblance to the common mackerel, no distinction is made in marketing chub and common mackerel.

Genus *Auxis*

(109) *Auxis thazard* (Lacepede) 1802

Frigate mackerel

**Specimens:**

This species is rare in Rhode Island waters. Tracy (1910) mentions a 12.5 inch (TL) specimen taken at Newport; and on August 23, 1880, 28 barrels were taken in a mackerel seine, ten miles east of Block Island. This species is of no economic importance in Rhode Island waters due to its rarity.

Genus *Euthynnus*

(110) *Euthynnus alleteratus* (Rafinesque) 1810

False albacore, little tunny, watermelon

**Specimens:**

This tropical-oceanic species occasionally strays into Rhode Island waters during the summer and fall. On June 1, 1957, an 11-inch (TL) false albacore was taken in the trap off the Point Judith breakwater. This species is of no economic importance.

Genus *Sarda*

(111) *Sarda sarda* (Bloch) 1793

Bonito, skipjack

**Specimens:**

This semi-tropical pelagic species is a summer visitor to the waters off Block Island and Block Island Sound. Each year several hundred pounds of this species are taken in the traps at Point Judith, Newport and by sport fishermen. During 1955, the first bonito appeared in the Point Judith traps on June 4. It was 17 inches (TL) and weighed 4.5 pounds.

### **Economic Importance :**

Bonito are similar to tuna in taste and are baked or broiled fresh as a food fish. During 1957, 5,936 pounds of bonito, valued at \$596, were recorded by the United States Fish and Wildlife Service from Rhode Island waters.

(112) *Sarda velox* Meek and Hildebrand 1923

Striped bonito

### **Specimens: (PLATE 36)**

Nichols and Breder (1926) report two specimens of striped bonito, 23.5 and 24 inches (TL) taken near Block Island on August 15 and August 22, 1914. This is a very rare species found off Panama.

Genus *Germo*

(113) *Germo alalunga* (Gmelin) 1788

Long-finned albacore, albacore

### **Specimens:**

Two mounted members of this species, 18 and 20 inches (TL) have been observed by the writer. These were taken by anglers near Block Island in 1928.

Genus *Thunnus*

(114) *Thunnus thynnus* (Linnaeus) 1758

Tuna, bluefin, horse mackerel, tunny

### **Specimens (PLATE 37)**

This oceanic species is frequently very abundant in Rhode Island waters during the summer and fall. Numerous giant bluefins are taken each summer in the traps off Newport and considerable quantities of the small immature school tuna are taken by trollers off Block Island. Occasionally large tuna are harpooned by commercial fishermen. Tuna appear in Rhode Island waters during July and August in the vicinity of Nebraska Shoal and Rosie's Ledge. "School tuna" (specimens under 50 pounds) appear off Block Island as early as July and are present throughout the summer and fall.

On occasion, large quantities of tuna are taken in Rhode Island waters during a short period of time. During August, 1949, over 30 tuna weighing up to 779 pounds were taken from the water near the buoy at Rosie's Ledge off Watch Hill. The United States Atlantic Tuna Tournament, held August 14, 15 and 16, 1956, produced a total of 34 giant bluefins weighing a total of 16,780 pounds. On August 15, 1956, Captain Mark Connally harpooned a 1,100 pound tuna a few miles SW of Block Island. The largest tuna taken in the United States waters by hook and line was from waters off Watch Hill.

### **Economic Importance:**

The presence of giant tuna in Rhode Island is a great asset to the summer tourist trade; thousands of people flock to Galilee to view the boats and the tuna catch at the annual United States Atlantic Tuna Tournament held there during August. Commercial tuna fishing is virtually undeveloped off the Rhode Island coast. Vast quantities of school tuna found off Block Island could provide the basis for a Rhode Island tuna canning industry if they were fished intensively with the aid of modern methods such as fish finders and aerial reconnaissance. According to the United States Fish and Wildlife Service figures, 42,743 pounds of tuna, valued at \$6,501, were landed at Rhode Island ports during 1957.

Genus *Scomberomorus*

(115) *Scomberomorus maculatus* (Mitchill) 1815

Spanish mackerel

### **Specimens:**

This southern species strays into Rhode Island waters during the summer months. A few are taken off Newport and Block Island each year. During July, 1957, M. Taylor caught a 29-inch (TL) Spanish mackerel while trolling off Buttonwoods. This fish weighed five pounds, four ounces. This species is of no economic importance in Rhode Island waters.

(116) *Scomberomorus regalis* (Bloch) 1793

Painted mackerel, cereen, kingfish



### Specimens:

Tracy (1910) mentions that this rare species is usually taken in autumn in Narragansett Bay.

Family Trichiuridae

Genus *Trichiurus*

(117) *Trichiurus lepturus* Linnaeus 1758

Cutlassfish, scabbardfish, ribbonfish

### Specimens:

This tropical species is rare in Rhode Island waters. A few appear occasionally. On July 1, 1954, a cutlassfish, 806 mm. (TL) was taken by the trawler *Alice and Nellie* in the vicinity of Block Island.

Family Xiphiidae

Genus *Xiphias*

(118) *Xiphias gladius* Linnaeus 1758

Swordfish, billfish, broadbill

### Specimens:

This warm water oceanic species is common in the waters off Block Island during July and August. Nichols and Breder (1926) mention that this species probably moves off into deeper water rather than migrating southward as they cite a 440-pound swordfish taken off Block Island during December in 80 fathoms on a trawl line set for tilefish. Swordfish are usually taken by harpoon and on rare occasions by hook and line. On July 6, 1953, H. Lowry harpooned the season's first swordfish, weighing 194 pounds, seven miles off Block Island. During August, 1956, 12 swordfish were harpooned in the waters between Block Island and Montauk Point by commercial fishermen. The trawler *Theresa* harpooned a swordfish weighing 353 pounds and two weighing 250 pounds were taken by the trawler *Rita* from this area. The year 1957 was an unusually good swordfish year.

### Economic Importance:

Swordfish is a choice food fish and brings high prices to the fishermen. During 1957, 123,413 pounds of swordfish valued at \$41,827, were landed at Rhode Island fishing ports.

Family Istiophoridae

Genus *Makaira*

(119) *Makaira albida* (Poey) 1860

White marlin

**Specimens:** (PLATE 38)

This tropical species which is common off southern Florida and the West Indies strays into the waters off Block Island during the summer months, where a few are taken by deep sea anglers. On August 12, 1955, R. Dackerman, of Newark, N. J., landed a 65-pound white marlin about 15 miles SE of Point Judith. On August 26, 1955, O. Seidner, of Westerly, landed a 90-pound white marlin off Block Island.

**Economic Importance:**

The white marlin is only of importance as a game species sought by anglers.

(120) *Makaira ampla* (Poey) 1860

Blue marlin

**Specimens:**

This southern species sometimes strays into waters off Block Island during July and August. On August 19, 1957, a 369 pound specimen was taken about 20 miles south of Block Island by Louis Ermo of Norwalk, Conn. This large blue marlin had a 12 foot total length and a four foot three inch girth. The fish was taken with a live eel trolled from the charter boat *Sinbad*.

Family Coryphaenidae

Genus *Coryphaena*

(121) *Coryphaena hippurus* Linnaeus 1758

Dolphin

**Specimens:**

This tropical species is occasionally taken by trollers in late summer off Block Island. Arnold (1951) mentions that many dolphin were observed in Block Island Sound during midsummer. This species is important only as a game fish.

Family Stromateidae

Genus *Poronotus*

(122) *Poronotus triacanthus* (Peck) 1800

Butterfish, dollarfish, butters

**Specimens:** (PLATE 39)

Abundant in inshore waters during the spring and summer and offshore during the winter months, the butterfish is widely sought after by commercial fishermen. The butterfish is taken in traps, purse seines and otter trawls in Rhode Island waters. During May, 1956 and 1957, butterfish were taken in large quantities by the traps at Point Judith and Newport. Specimens observed by the writer ranged in size from three to ten inches, (TL).

**Economic Importance:**

A delicately flavored fish, it brings a good price at the fish market. It is the number two Rhode Island species in dollar value and pounds landed. During 1957, 3,102,817 pounds of butterfish were landed at Rhode Island ports, valued at \$236,833.

Genus *Peprilus*

(123) *Peprilus alepidotus* (Linnaeus) 1766

Harvestfish, starfish

**Specimens:**

This rare West Indian species is sometimes taken during summer months by trawlers and trap fishermen in company with butterfish. Three specimens were collected in 1957; two seven and eight inches (TL) from Newport traps in October, and one six and a half inches (TL) from the Point Judith trap in July. This species is very rare and of no commercial importance.

Family Centrolophidae

Genus *Parinurichthyes*

(124) *Parinurichthyes perciformis* (Mitchill) 1818

Barrelfish, rudderfish, polefish

**Specimens:**

Found associated with floating seaweed and driftwood, this

species is sometimes taken by trawlers and trap fishermen. A specimen in the collection of the Narragansett Marine Laboratory was taken in Narragansett Bay in 1938. This species is generally found ranging from 6 to 12 inches (TL). It is of no economic importance.

Genus *Centrolophus*

(125) *Centrolophus niger* (Gmelin) 1789

Black ruff

**Specimens:** (PLATE 77)

This is a European species which is very rare in New England waters. Bigelow and Schroeder (1953 b) report three records from the Gulf of Maine, in 1890, 1936 and 1951. On October 10, 1957, the trawler *Irene and Walter* captured a 13-inch (TL) black ruff in an otter trawl, four miles south of Block Island. This is the first Rhode Island record for this species. This specimen is now in the fish collection of the Zoology Department of the University of Rhode Island.

Family Carangidae

Genus *Naucrates*

(126) *Naucrates ductor* (Linnaeus) 1758

Pilotfish, rudderfish, shark pilot

**Specimens:**

This species is common along Rhode Island coastline during July and August. Specimens were observed and collected in 1957 from Watch Hill, Weekapaug, Point Judith and Newport. They ranged from five to nine inches (TL).

Genus *Seriola*

(127) *Seriola zonata* (Mitchill) 1815

Rudderfish, amberjack, pilotfish

**Specimens:** (PLATE 40)

This species is found in Rhode Island waters from July to October. A specimen, six inches (TL), was taken by the trawler *Jane Dore* on July 30, 1957, four miles east of Watch Hill Point. Two

specimens, 5.5 and 7 inches (TL) were collected from Newport traps in October, 1957.

- (128) *Seriola lalandi* Cuvier and Valenciennes 1833  
Amberjack, amberfish

**Specimens:**

On July 2, 1957, a 40-pound specimen was taken in the traps at Point Judith. The trawler *Theresa* brought up an amberjack, 14 inches (TL) in an otter trawl on October 3, 1957, ten miles south of Block Island. The amberjack is a stray species to Rhode Island waters and is of no economic importance.

- Genus *Decapterus*  
(129) *Decapterus punctatus* (Agassiz) 1829  
Scad, cigarfish, round robin

**Specimens:**

This species is a southern stray into Rhode Island waters during the summer months. A five-inch specimen was taken in the Point Judith traps on June 28, 1957.

- (130) *Decapterus macarellus* (Cuvier and Valenciennes) 1833  
Mackerel scad

**Specimens:**

Three specimens of this southern species ranging from eight to ten inches (TL) were collected from the Newport traps in October, 1957.

- Genus *Caranx*  
(131) *Caranx hippos* (Linnaeus) 1766  
Crevalle, jack, jack crevalle

**Specimens:**

This is a southern species which occasionally occurs in Rhode Island waters from July through October. An 11-inch (TL) specimen was collected from the Newport trap in October, 1957.

- (132) *Caranx crysos* (Mitchill) 1815  
Hardtail, yellow-jack, runner

### Specimens:

This is a warm water fish which is found in Rhode Island waters during summer and fall. Specimens five to eight inches (TL) were collected from the Newport traps during October, 1957.

(133) *Caranx bartholomaci* Cuvier and Valenciennes 1833  
Yellowjack

### Specimens:

A member of this southern species, 92 mm. (TL) was collected by using rotenone, on September 19, 1957, at Weekapaug. This is the first record of this species in Rhode Island waters.

Genus *Trachurus*

(134) *Trachurus trachurus* (Linnaeus) 1758  
Saurel, rough scad

### Specimens:

About a dozen members of this southern species, from four to seven inches (TL) were taken by persons fishing off the Watch Hill dock on September 30, 1956, and were examined by the writer. Figure 202, Bigelow and Schroeder (1953 b) illustrates a saurel from Rhode Island.

Genus *Trachurops*

(135) *Trachurops crumenophthalmus* Bloch 1793  
Goggle-eyed scad, big-eyed scad, goggler

### Specimens:

This tropical species is found during late summer and fall in Rhode Island waters. Two specimens of 4 and 5.2 inches (TL) were taken at Weekapaug on September 19, 1957.

Genus *Vomer*

(136) *Vomer setapinnis* (Mitchill) 1815  
Moonfish, dollarfish

### Specimens:

A 72 mm. (TL) specimen was collected from the traps in Newport in October, 1957. Tracy (1910) says that the adults of this species

are rare and that the moonfish varies in abundance in different years.

Genus *Selene*

(137) *Selene vomer* Linnaeus 1758

Lookdown, dollarfish, moonfish

**Specimens:** (PLATE 41)

This is a rare tropical species which strays into Rhode Island waters during late summer and fall. A 52 mm. (TL) specimen was taken from the Newport traps in October, 1957, by the author.

Genus *Oligoplites*

(138) *Oligoplites saurus* (Bloch and Schneider) 1801

Leatherjacket

**Specimens:**

This is a tropical species which is rare in Rhode Island waters. Three specimens of this species were collected by the writer from the traps at Point Judith during June and July, 1957. They ranged from seven to ten inches (TL).

Genus *Alectis*

(139) *Alectis crinitus* (Mitchill) 1826

Threadfin

**Specimens:** (PLATE 42)

The type specimen of this southern species was a threadfin taken near Block Island and described by Mitchill in 1826. Five specimens of a standard length, from four to seven inches (TL) were collected by the writer from the Newport traps during October, 1957.

Genus *Trachinotus*

(140) *Trachinotus falcatus* (Linnaeus) 1758

Round pompano

**Specimens:**

A three-inch (TL) specimen of this tropical species was collected in the Pettaquamscutt River by D. Horton during the summer of



1957. Tracy (1910) mentions round pompano in Narragansett Bay in 1899.

(141) *Trachinotus carolinus* (Linnaeus) 1766

Common pompano

**Specimens:**

Tracy (1910) mentions specimens at Nantucket; Noank, Connecticut and in Narragansett Bay during 1899.

Family Pomatomidae

Genus *Pomatomus*

(142) *Pomatomus saltatrix* (Linnaeus) 1758

Bluefish, choppers, snappers

**Specimens:** (PLATES 43, 44)

This migratory species is present in Rhode Island waters during the summer and fall. The abundance of the species fluctuates periodically from time to time. Bluefish have been observed by the writer in local waters from June until the end of November. On June 5, 1953, there were 12 bluefish taken in the Point Judith traps ranging from three to seven pounds. Commercial fishermen catch bluefish in Rhode Island waters using gill nets, traps, haul seines, otter trawl and hand-lines with heave and haul method. Small members of this species six to eight inches (TL) are known as snapper blues and provide considerable sport for anglers.

**Economic Importance:**

Among the most popular of the food fishes, bluefish brings a good price at the fish market. Sport fishermen spend considerable time and money in Rhode Island pursuing the sometimes elusive bluefish by boat and from the shoreline. During 1957, 50,246 pounds of bluefish, valued at \$7,003, were landed by Rhode Island commercial fishermen.

Family Serranidae

Genus *Roccus*

(143) *Roccus saxatilis* (Walbaum) 1792

Striped bass, striper, rockfish

**Specimens:** (PLATES 45, 46, 47)

The striped bass is caught along Rhode Island's sandy beaches, rock-bound shores, in tidal rivers such as the Pettaquamscutt and Taunton, and Block Island Sound. It is pursued by vast hordes of sport fishermen and a few commercial fishermen with beach seines. It is the most popular salt water game fish in Rhode Island waters and has shown a marked decline in abundance in recent years. The variation in abundance of this species can possibly be attributed to poor year classes and pollution of spawning grounds. A few stripers may sometimes overwinter in Pettaquamscutt River and Salt Pond. The first stripers of the season usually appear in late March and early April in coastal estuaries and this species is present until the end of November. Many notable catches of striped bass have been made in Rhode Island. Listed below are 1960 World Records recognized by the International Game Fish Association, in various line categories, of striped bass taken from Rhode Island waters.

Weight	Length	Place	Date	Angler
61 lbs. 10 oz.	4'5"	Block Island	7- 5-56	L. A. Garceau
59 lbs.	4'3½"	Pt. Judith	10-22-58	A. Bartolomucci
58 lbs. 8 oz.	4'4"	Block Island	11- 2-56	L. A. Garceau
57 lbs. 8 oz.	4'2½"	Narragansett Bay	7- 1-59	B. Craig
57 lbs. 8 oz.	4'2½"	Block I. Sound	8-28-59	M. R. Aubry
54 lbs.	4'5"	Charlestown	8- 5-56	[Mrs.] G. Kinsman, Jr.

Photographs and description of Rhode Island stripers appear in Gordon (1957 g).

**Economic Importance:**

The striped bass is an important adjunct to the tourist trade in the summer and fall. This species is chiefly responsible for the influx of thousands of surfcasters and boat fishermen from neighboring and distant states. Because of its excellent flavor as a food fish, this species is widely sought by certain commercial fishermen. During 1957, according to United States Fish and Wildlife Service figures, 21,797 pounds of striped bass, valued at \$5,033 were recorded at Rhode Island fishing ports.

Genus *Morone*

(144) *Morone americana* (Gmelin) 1789

White perch, sea perch

**Specimens:**

The white perch is present throughout the year in many brackish ponds and tidal rivers of Rhode Island. The writer examined white perch from the Pawcatuck and Pettaquamscutt Rivers, Ninigret and Winnapaug Ponds. Specimens examined ranged from 7 to 12 inches (TL). Horton collected white perch in Pettaquamscutt River on August 8, 1957.

**Economic Importance:**

The chief fishery for this food fish is centered at the Pettaquamscutt River. During 1957, 273 pounds of white perch, valued at \$37, were recorded from Rhode Island ports.

Genus *Epinephelus*

(145) *Epinephelus niveatus* (Cuvier and Valenciennes) 1828

Snowy grouper, spotted grouper

**Specimens:**

Tracy (1910) mentions three members of this tropical species from Rhode Island in the United States National Museum. They are a 2.5 inch (TL) specimen from Tiverton; and two which measure 3 and 3.25 inches (TL) from Point Judith.

Genus *Centropristes*

(146) *Centropristes striatus* (Linnaeus) 1758

Sea bass, black bass, tallywag, black hARRY, black perch

**Specimens: (PLATE 48)**

This species is common in spring, summer and fall around rocks and wrecks in Rhode Island waters. They are found in depths ranging from two fathoms to rather deep water. Trawlers and trap fishermen take considerable quantities of sea bass along with hook and line fishermen. A 17-inch sea bass was taken by the author, July 17, 1952, off Weekapaug, R. I. An 18-inch sea bass was taken July 12, 1957, off Block Island by E. C. Shanks.

### Economic Importance:

This firm, white meated species is a high quality food fish. During 1957, 317,190 pounds of sea bass, valued at \$38,447, were landed at Rhode Island ports.

Genus *Rypticus*

(147) *Rypticus bistrispinus* (Mitchill) 1818

Soapfish

### Specimens:

There is one record of this tropical species in Rhode Island waters. Tracy (1910) mentions a specimen taken at Newport by Powell and described by Cope.

Family Lobotidae

Genus *Lobotes*

(148) *Lobotes surinamensis* (Bloch) 1790

Tripletail, flasher, black grunt

### Specimens:

This warm water species is a rare straggler to Rhode Island waters. Tracy (1910) mentions specimens taken near Prudence Island, Saunderstown, Wickford and Quonset, taken from 1901 to 1908.

Family Priacanthidae

Genus *Priacanthus*

(149) *Priacanthus arenathus* Cuvier and Valenciennes 1829

Big eye, catalufa

### Specimens:

Two members of this tropical species, one taken in October, 1939, from Wilcox Trap, Tiverton; and the other from Middle Bridge, in August, 1940, are in the collection of the Narragansett Marine Laboratory. The writer collected a 118 mm. (TL) big eye in October, 1957, from the traps at Newport.

Genus *Pseudopriacanthus*

(150) *Pseudopriacanthus altus* (Gill) 1862

Deep big eye

**Specimens:** (PLATE 49)

Tracy (1910) describes this brilliant red tropical species as very rare. Two members of this species were collected by the author. The first was taken at Misquamicut in July, 1952, and measured 62 mm. (TL). The second specimen, 57 mm. (TL), was taken using rotenone at Weekapaug on October 10, 1957.

Family Lutianidae

Genus *Lutianus*

(151) *Lutianus griseus* (Linnaeus) 1758

Gray snapper, mangrove snapper

**Specimens:**

Tracy (1910) mentions three specimens taken at Newport in 1896 and 1897, believed to be this species.

(152) *Lutianus blackfordii* Goode and Bean 1878

Red snapper

**Specimens:**

Tracy (1910) cites one specimen taken near Block Island as reported by Bean (1901).

Family Sparidae

Genus *Stenotomus*

(153) *Stenotomus versicolor* (Mitchill) 1815

Scup, porgy, scuppaug

**Specimens:** (PLATE 50)

This species is abundant in the inshore waters of Rhode Island during summer and fall. During the winter months, the scup move offshore into deeper water. In the spring they move into inshore water to spawn. Large quantities of this species are taken by the Newport and Point Judith traps. Some trawlers take this species throughout the year, following the inshore and offshore migrations. Some anglers pursue this species for sport. Specimens observed by the writer during the summer and fall of 1957, ranged from 2 to 16 inches (TL).

### Economic Importance:

An excellent food fish when fried or broiled, scup are sometimes so abundant that the fishermen sell the smaller sized scup for trash fish. During 1957, 5,401,010 pounds, valued at \$308,396, were landed at Rhode Island ports.

#### Genus *Calamus*

(154) *Calamus bajonado* (Bloch and Schneider) 1801

Jolt-head porgy, bajonado

### Specimens:

This is a tropical species found from the West Indies to Brazil. On November 25, 1955, a nine pound, eight ounce, 650 mm. (TL) jolt-head porgy was taken by Captain George Berg on the trawler *Old Mystic*, three miles SE of Watch Hill. The fish was sent to the Bingham Oceanographic Laboratory where it was positively identified as *Calamus bajonado* by J. E. Morrow. This specimen was a new record for the Atlantic coast, as it had never been recorded previously north of Bermuda. Further morphological information about this species, which closely resembles the scup, can be found in Morrow (1956).

#### Genus *Lagodon*

(155) *Lagodon rhomboides* (Linnaeus) 1766

Pinfish, sailors' choice, bream

### Specimens: (PLATE 51)

This tropical species is a rare summer stray into Rhode Island waters. A few specimens have been observed mixed with scup, which they closely resemble, during June and July, 1956 and 1957, in the traps at Point Judith. Hildebrand and Schroeder (1928) state that the maximum size recorded for pinfish is 13 inches. Breder (1929) states that this species reaches a length of about ten inches. Beebe and Tee-Van (1933) state that the pinfish grows to slightly less than a foot.

On June 8, 1955, the author collected and photographed a pinfish from the trap at Point Judith which he believes to be a new size record for this species. This pinfish was 14.25 inches (362 mm.)

(TL) and weighed one pound, seven ounces. The pinfish is a very edible species, but due to its small size and relative scarcity, it is of no economic importance in Rhode Island.

Genus *Archosargus*

(156) *Archosargus probatocephalus* (Walbaum) 1792

Sheepshead

This southern member of the scup family occasionally strays into Rhode Island waters and is taken in the traps at Newport and Point Judith during the summer and fall on rare occasions, according to the fishermen. This species reaches 30 inches (TL). Tracy (1910) states that sheepshead are sometimes taken at Newport.

Family Kyphosidae

Genus *Kyphosus*

(157) *Kyphosus sectatrix* (Linnaeus) 1766

Rudder fish

#### Specimens:

This tropical species occurs only as a straggler from North Carolina northward. Tracy (1910) mentions a rudder fish in the United States National Museum taken at Newport by S. Powell.

Family Sciaenidae

Genus *Cynoscion*

(158) *Cynoscion regalis* (Bloch and Schneider) 1801

Weakfish, squeteague, sea trout, chickret, squet

#### Specimens: (PLATE 52)

The migratory weakfish are present in Rhode Island from May to October. This commercial and sport species is subject to considerable annual variation in abundance. During 1956, and 1957, the weakfish population began to show an increase in numbers in Rhode Island waters. During 1957, weakfish were taken in the Pawcatuck River, Pettaquamscutt River and in the traps in greater quantities than during the past nine years. The largest specimen observed by the writer was a 29-inch (TL) weakfish weighing nine pounds, taken in the Point Judith traps on July 2, 1957.





### Economic Importance:

Esteemed by many as both a food and game fish, the weakfish, when abundant, are of considerable economic importance. In 1947, 325,800 pounds of weakfish were landed at Rhode Island ports; while the total for 1957 was 23,254 pounds.

Genus *Bairdiella*

(159) *Bairdiella chrysura* (Lacepede) 1803

Silver perch, sand perch, mademoiselle, yellowtail

### Specimens:

Found chiefly from New York to Texas, the silver perch strays into Rhode Island inshore waters during the summer. During the summer of 1957, J. Cronan reported large numbers of juveniles of this species taken along the shore in upper Narragansett Bay. Small specimens, three to five inches (TL) were collected from Wickford, Point Judith and Weekapaug by the writer. This species is not abundant enough to be of any economic importance.

Genus *Leiostomus*

(160) *Leiostomus xanthurus* Lacepede 1802

Spot, lafayette, silver gudgeon, goody

### Specimens:

This warm water fish is found from southern New England to Texas. A number of specimens are taken each year in late summer and fall at the traps in Newport. During October, 1957, the writer collected eight spots from Newport traps, ranging in size from 6 to 11 inches (TL). Due to its scarcity in local waters, the spot is of minor economic importance in Rhode Island. In 1956, 134 pounds of spot, valued at \$8.00 were landed at Rhode Island ports.

Genus *Micropogon*

(161) *Micropogon undulatus* (Linnaeus) 1766

Croaker, hardhead, crocus, king billy

### Specimens:

Although this southern species is not common north of New Jersey, a few strays are taken in Rhode Island traps each year. On

July 2, 1953, a ten-inch croaker was taken in the trap off the Point Judith breakwater by W. Clark.

Genus *Menticirrhus*

(162) *Menticirrhus saxatilis* (Bloch and Schneider) 1801

Kingfish, king whiting, roundhead, sea mink

**Specimens:** (PLATE 53)

Most abundant along the middle Atlantic coast, this excellent food and game fish is present in Rhode Island waters from April to November. Specimens of kingfish ranging in size from 6 to 14 inches (TL) were examined by the writer in the traps at Point Judith during the summer of 1957.

**Economic Importance:**

Commercial trawlers and trappers take a small amount of this excellent food fish each year. In 1956, 1,785 pounds of king whiting, valued at \$132, were landed at Rhode Island fishing ports.

Genus *Pogonias*

(163) *Pogonias cromis* (Linnaeus) 1766

Black drum, drum, sea drum

**Specimens:**

The drum is found from southern New England to Argentina and each year a few specimens are taken in the Newport and Point Judith traps during the summer and fall. On July 2, 1957, a 30-pound drum was taken in the Clark traps at Point Judith. Due to its scarcity, this species is of no economic importance in Rhode Island.

Family Pomacentridae

Genus *Eupomacentrus*

(164) *Eupomacentrus leucostictus* (Muller and Troschei) 1848

Beau-gregory, black pilot, cockeye pilot

**Specimens:**

This West Indian species has never been recorded in Rhode Island or on the New England mainland previously. The only

reliable reference to northern stragglers is in Nichols and Breder (1927) where mention is made of nine specimens taken at Katama Bay, Martha's Vineyard, from August 30 to October 4, 1899. On October 19, 1957, a 41 mm. (TL) beau-gregory was taken in a tidal pool at Weekapaug using rotenone.

Genus *Abudefduf*

(165) *Abudefduf marginatus* (Bloch) 1787

Sergeant-major, demoiselle, cow-pilot

#### Specimens:

This is a tropical species which is rare in Rhode Island waters. Tracy (1910) mentions this species taken at Newport.

Family Branchiostegidae

Genus *Caulolatilus*

(166) *Caulolatilus microps* Goode and Bean 1878

Blanquillo

#### Specimens:

A member of this species was dragged up in the "Gully" off Block Island by the trawler *Northwind* in March, 1953. Identification of the fish was made by M. P. Fish of the Narragansett Marine Laboratory.

Family Branchiostegidae

Genus *Lopholatilus*

(167) *Lopholatilus chamaeleonticeps* Goode and Bean 1879

Tilefish

#### Specimens: (PLATE 54, 55)

This deep water fish is found on the edge of the continental shelf directly off the coast of Rhode Island. It occurs from Nova Scotia to Chesapeake Bay. During the late winter and spring, large quantities of this food fish are taken by Rhode Island trawlers in the waters off Block Island. Tilefish examined at Point Judith and Stonington by the writer ranged in size from 15 to 36 inches (TL). A more complete description of the tilefish fishery of Rhode Island can be found in Gordon (1955 m).

### Economic Importance:

Tilefish, a good quality food fish, are sought by offshore trawlers during the winter months. During 1957, 144,330 pounds of tilefish, valued at \$26,097, were landed at Rhode Island ports.

Genus *Sebastes*

(168) *Sebastes marinus* (Linnaeus) 1758

Rosefish, ocean perch, redfish, red bream

### Specimens:

A deep water species off the Rhode Island coast, this species is sometimes taken by offshore trawlers. It is much more plentiful farther north where it supports a large fishery. Rosefish measuring 14 to 20 inches (TL) were brought into Point Judith in December, 1957, and examined by the writer.

### Economic Importance:

Large quantities of this species are filleted, packaged and frozen in Maine and Massachusetts. Rhode Island offshore trawlers fish for tilefish rather than rosefish on the edge of the continental shelf, hence very few pounds are brought into Rhode Island.

Family Caproidae

Genus *Antigonia*

(169) *Antigonia capros* Lowe 1843

Boar fish

### Specimens: (PLATE 56)

The boarfish is a rare tropical offshore species. On April 20, 1957, the trawler *Dauntless* captured a 57 mm. (TL) specimen on the continental shelf off Block Island. This specimen, which was examined by the writer, is believed to be the first record of this species in Rhode Island waters.

Family Cottidae

Genus *Myoxocephalus*

(170) *Myoxocephalus aeneus* (Mitchill) 1815

Grubby sculpin, brassy sculpin, little sculpin

### Specimens:

A year round resident in Rhode Island waters, this species nearly always occurs in the catch of inshore trawlers. Specimens examined ranged from three to seven inches (TL). This species is of no economic importance and is utilized with the trash species.

(171) *Myoxocephalus scorpius* (Linnaeus) 1758

Shorthorned sculpin, Greenland sculpin, daddy sculpin

### Specimens:

This is the largest species of sculpin in Rhode Island waters reaching a length of 25 inches. This is a cool water species and is very common in Block Island Sound during the winter months. In the spring it migrates offshore to colder waters. It was observed by the writer in December, 1957, and January and February, 1958, in the catch of trawlers operating in Block Island Sound. This sculpin is of importance only as a trash species.

(172) *Myoxocephalus octodecimspinosus* (Mitchill) 1815

Longhorn sculpin, gray sculpin, common sculpin,  
spined sculpin

### Specimens:

The longhorn sculpin is one of the most abundant species in the inshore regions of Rhode Island. Studies by Morrow (1951) show this species to be most abundant in Block Island Sound from October through May. Specimens examined by the author ranged from 3 to 14 inches, (TL). This species, though edible, is only of importance as a trash fish. An excellent discussion of the life history of this species is given by Morrow (1951).

Family Hemitriptidae

Genus *Hemitripter*

(173) *Hemitripter americanus* (Gmelin) 1788

Sea raven, red raven, devil fish

### Specimens: (PLATE 57)

The red sea raven occurs in the waters of Block Island Sound during the winter months. A 17-inch (TL) specimen was taken by the trawler *Jane Dore* on January 2, 1957, three miles east of Watch Hill Point. This species is utilized with trash fish.

Family Agonidae

Genus *Aspidophoroides*

(174) *Aspidophoroides monopterygius* (Bloch) 1786

Alligatorfish, sea poacher

**Specimens:**

This rare species is found from Greenland to Cape Cod in deep water. There is one record of this species in Rhode Island waters. A head of an alligator fish was dredged up off Watch Hill in 1874 on the Pecten Ground according to Goode and Bean (1895).

Family Cyclopteridae

Genus *Cyclopterus*

(175) *Cyclopterus lumpus* Linnaeus 1758

Lumpfish, lump sucker, lump

**Specimens:** (PLATES 58, 59)

This is a northern species, plentiful around Greenland and Labrador, which strays down into southern New England during winter and early spring. On March 21, 1953, a lumpfish was taken three miles SE of Watch Hill by the trawler *Jane Dore*. The writer believes this specimen to be the largest on record. This lumpfish was carefully examined by the author. It weighed 21 pounds 4 ounces, measured 23.5 inches (TL) and contained an estimated 279,620 eggs. For additional information about this record specimen refer to Gordon (1954 a). On May 5, 1957, a six-pound lumpfish was speared by a skin diver near the Watch Hill lighthouse. Although edible, lumpfish are usually utilized as trash species.

Family Liparidae

Genus *Neoliparis*

(176) *Neoliparis atlanticus* Jordan and Evermann 1898

Sea snail, New England sea snail

**Specimens:**

One member of this northern species was examined. A 55 mm. (TL) sea snail was taken by J. Watson on March 28, 1957, south of Gould Island in Narragansett Bay. This species is uncommon in Rhode Island waters.

Genus *Liparis*

(177) *Liparis liparis* (Linnaeus) 1766

Striped sea snail

**Specimens:**

This Arctic and northern species strays into Rhode Island waters during the winter and spring. Tracy (1910) mentions specimens taken off Watch Hill and Block Island. A specimen was collected by J. Watson in Narragansett Bay during March, 1957.

Family Triglidae

Genus *Prionotus*

(178) *Prionotus carolinus* (Linnaeus) 1771

Common sea robin, robin, gurnard

**Specimens:**

Common sea robin occur in Rhode Island waters from April until October. Many are taken by trap and trawler fishermen and utilized with trash species. Specimens observed ranged in size from 7 to 15 inches (TL).

(179) *Prionotus evolans* (Linnaeus) 1766

Striped sea robin

**Specimens:**

This species is similar in form and habits to *Prionotus carolinus*, but reaches a maximum of 18 inches (TL) and has brown bars on its pectoral fins. It is not as common as the *Prionotus carolinus*, but is frequently taken by trap and otter trawl from June through October in Rhode Island waters.

Family Peristediidae

Genus *Peristedion*

(180) *Peristedion miniatum* Goode 1880

Armored sea robin

**Specimens:**

According to Evermann and Marsh (1902) *Peristedion miniatum* is known only from the type locality, which is the Gulf Stream



off Rhode Island. Three specimens, 8 to 11 inches (TL) were collected from the trawler *Dauntless*, taken on the continental shelf off Block Island on April 20, 1957.

Family Dactylopteridae

Genus *Dactylopterus*

(181) *Dactylopterus volitans* (Linnaeus) 1758

Flying gurnard, flying robin, flying fish

**Specimens:** (PLATES 60, 61)

This southern species is an occasional visitor to Rhode Island waters in the fall. On October 5, 1957, a 5.5 inch (TL) flying gurnard was captured by E. Nugent while he was scallop dredging in Little Narragansett Bay, Westerly. Specimens have also been taken in the fall of 1957, in Salt Pond and Ninigret Pond.

Family Labridae

Genus *Tautogolabrus*

(182) *Tautogolabrus adspersus* (Walbaum) 1792

Cunner, bergall, chogy, nibbler

**Specimens:** (PLATE 62)

This species is very common around rocks, wharves and jetties. It provides considerable sport. Cunnners observed by the writer ranged from three to nine inches (TL). Further elaboration on the habits of cunnners can be found (Gordon, 1957 h).

### **Economic Importance:**

Large cunnners make excellent food fish. In 1956, 190 pounds of cunnners, valued at \$6, were recorded at Rhode Island fishing ports.

Genus *Tautoga*

(183) *Tautoga onitis* (Linnaeus) 1758

Tautog, black, blackfish

**Specimens:** (PLATES 63, 64)

The blackfish lives around rocks and seaweed in shoal water. This is a favorite species with many hook and line anglers and spearfishermen. Listed below are 1960 World Records, recognized

by the International Game Fish Association, in various line categories, of tautog taken from Rhode Island waters.

Weight	Length	Place	Date	Angler
21 lbs.	2'6"	Jamestown	11- 6-54	C. W. Sundquist
20 lbs. 14 oz.	2'8"	Newport	10-20-55	W. R. Peckham
12 lbs.	2'1.5"	Block Island	10-18-52	D. V. Marshall

Additional information about tautog can be found in Gordon (1956 g).

### **Economic Importance:**

Tautog are high on the list of favorite marine fish among anglers. In addition, the blackfish is a tasty food fish. During 1957, Rhode Island commercial fishermen landed 62,741 pounds of tautog, valued at \$3,105.

Family Ephippidae

Genus *Chaetodipterus*

(184) *Chaetodipterus faber* (Broussonet) 1782

Spadefish, angel-fish, moonfish, tripletail

### **Specimens:**

Tracy (1910) reports one specimen of this rare tropical species taken in Narragansett Bay.

Family Chaetodontidae

(185) *Chaetodon ocellatus* (Bloch) 1787

Butterfly-fish, parche

### **Specimens: (PLATE 65)**

Two specimens of this very rare tropical species were collected by the writer. The only previously recorded butterfly-fish from Rhode Island waters was a specimen, one inch (TL) taken by Gill in Newport in 1861, according to Tracy (1910). The two butterfly-fish collected by the writer were taken at Weekapaug on September 19, 1957, using rotenone. They were 20 mm. and 22 mm. (TL).

Family Gobiidae

Genus *Gobiosoma*

(186) *Gobiosoma bosci* (Lacepede) 1798

Naked goby

**Specimens:**

This is a small species which is usually difficult to capture. A 26 mm. (TL) specimen was taken at Weekapaug on October 10, 1957, with rotenone. A specimen taken from Ninigret Pond is in the Narragansett Marine Laboratory collection.

(187) *Gobiosoma ginsburgi* Hildebrand and Schroeder 1928

Ginsburg's gobi

**Specimens:**

One specimen, 30 mm. (TL) is found in the collection of the Narragansett Marine Laboratory. It was taken in 1938, from Narragansett Bay.

Family Echeneididae

Genus *Echeneis*

(188) *Echeneis naucrates* Linnaeus 1758

Shark remora, remora

**Specimens:** (PLATES 2, 66, 67, 68)

This species occurred periodically in the fish traps at Point Judith during June and July of 1956 and 1957. This species is found associated with mako, white sharks and large sting rays. Specimens were collected and ranged from 9 to 14 inches (TL). Photographs and description of this species occur in Gordon (1955 j, 1956 l, 1956 o).

Genus *Remora*

(189) *Remora brachyptera* (Lowe) 1829

Swordfish sucker

**Specimens:**

This remora is occasionally taken with swordfish off Block Island. An eight-inch specimen was examined in September 1957. It came from Block Island Sound and was attached to *Sphyrna zygaena*.

Genus *Rhombochirus*

(190) *Rhombochirus osteochir* (Cuvier) 1829

Spearfish sucker

**Specimens:**

This species is sometimes taken with marlin. A specimen is reported by Tracy (1910).

Family Ammodytidae

Genus *Ammodytes*

(191) *Ammodytes americanus* DeKay 1842

Sand launce, sand eel, launce

**Specimens:**

This species occurs throughout the year in Rhode Island waters, but it is most plentiful in spring and fall. It has been observed in the stomach contents of weakfish, mackerel, pollock, cod, striped bass and bluefish. Specimens ranging from four to seven inches (TL) have been observed by the writer. The sand launce is only of importance as a bait species.

Family Mullidae

Genus *Mullus*

(192) *Mullus auratus* Jordan and Gilbert 1882

Goatfish, red mullet, surmullet

**Specimens:**

This tropical species strays into Rhode Island waters during the summer and fall. During the summer and fall of 1957, J. Ropes collected six members of this species in Dutch Island harbor bay, ranging from 104 to 115 mm. (TL). S. Saila captured one of this species in Ninigret Pond during September, 1957. It was kept alive for several weeks at the Narragansett Marine Laboratory.

Genus *Upeneus*

(193) *Upeneus maculatus* (Bloch) 1893

Red goatfish, salmonete

### Specimens:

A member of this Carribean species, 148 mm. (TL) was collected by the author in October, 1957, from the traps in Newport. This is believed to be the first record of this species in New England waters.

Family Pholidae

Genus *Pholis*

(194) *Pholis gunnellus* (Linnaeus) 1758

Rock eel, gunnel, rockfish

### Specimens:

This species is a year round resident in Rhode Island. It is in offshore areas during the winter and in littoral rocky spots during the spring, summer and fall. A specimen 118 mm. (TL) long was collected July 10, 1957, off the dock at Watch Hill in a minnow trap.

Genus *Ulvaria*

(195) *Ulvaria subbifurcata* (Storer) 1839

Radiated shanny, ulva-fish

### Specimens:

Only one specimen of this rare species is on record from Rhode Island. Tracy (1910) reports a member of this species taken off the mouth of Newport harbor.

Family Cryptacanthodidae

Genus *Cryptacanthodes*

(196) *Cryptacanthodes maculatus* Storer 1839

Wrymouth, bastard cusk, ghostfish

### Specimens:

Tracy (1910) mentions a 24-inch specimen from Rhode Island.

Family Anarhichadidae

Genus *Anarhichas*

(197) *Anarhichas lupus* Linnaeus 1758

Wolfish, wolffish

### Specimens:

This species is occasionally taken on the tilefish grounds off Block Island. Specimens have been observed from 3 to 4.5 feet (TL) long. During 1956, 1,996 pounds of wolffish, valued at \$85, were landed at Rhode Island ports.

Family Zoarcidae

Genus *Macrozoarces*

(198) *Macrozoarces americanus* (Bloch and Schneider) 1801

Ocean pout, eel pout, ling, congo eel, blenny

### Specimens: (PLATE 69)

This species is found throughout the year in Block Island Sound. The "Deep Hole" east of Block Island is one of the best sources of pout. In late winter and early spring there is a slight inshore migration of this species which spawns in rocky areas. For further information about ocean pout life history see Olsen and Merriman (1946) and Gordon (1958 d).

### Economic Importance:

Although utilized as a food fish during World War II, the pout is now utilized chiefly as a trash species. A great many of the pout in Rhode Island waters are infested with a protozoan parasite, *Plistophora*, an intramuscular microsporidian which renders them unappetizing in appearance.

Genus *Lycodes*

(199) *Lycodes reticulatus* Reinhardt 1838

Arctic eelpout, reticulated eelpout

### Specimens:

Two 14-inch (TL) specimens of this species were taken by the trawler *Fish Hawk* in Narragansett Bay in 17 fathoms, according to Goode and Bean (1895).

Genus *Lycenchelys*

(200) *Lycenchelys verrillii* (Goode and Bean) 1877

Wolf eel

### Specimens:

Tracy (1910) mentions a specimen at the Boston Society of Natural History which was taken at Newport.

Family Batrachoididae

Genus *Opsanus*

(201) *Opsanus tau* (Linnaeus) 1766

Toadfish, toad grunter

### Specimens: (PLATE 70)

The toadfish is found throughout the year among rocks and weeds along the Rhode Island shoreline. It is believed that this species hibernates in the mud during the winter. Occasionally taken by trawlers, trap fishermen and anglers, this species is of no economic importance.

Family Balistidae

Genus *Balistes*

(202) *Balistes carolinensis* Gmelin 1789

Triggerfish

### Specimens:

This tropical species strays into Rhode Island waters during the summer and fall. Specimens were collected in Winnapaug Pond, Charlestown Pond and Block Island Sound during 1957. The Charlestown specimen was taken alive by S. Saila and kept in captivity for over a month in the tanks at the Narragansett Marine Laboratory before expiring. On August 6, 1957, a 19-inch (TL) member of this species weighing 4.25 pounds was taken four miles south of Napatree Point, Watch Hill. The author believes this specimen to be a new size record for *Balistes carolinensis*.

(203) *Balistes forcipatus* Gmelin 1789

Powell's filefish

### Specimens:

This is an extremely rare species of questionable presence in Rhode Island waters. It is recorded from the west coast of Africa and Brazil. Tracy (1910) cites a young specimen of this species



taken by S. Powell at Newport in September, 1867. Since the young of the filefish and triggerfish exhibit polymorphism, the writer questions the validity of this single specimen in Rhode Island waters.

Family Monacanthidae

Genus *Monacanthus*

(204) *Monacanthus hispidus* (Linnaeus) 1766

Filefish, foolfish

**Specimens:**

A few members of this tropical species are occasionally taken in late summer and fall in the traps. The fish range from four to six inches (TL). On September 19, 1957, a 23 mm. (TL) young filefish of this species was taken at Weekapaug using rotenone.

Genus *Alutera*

(205) *Alutera schoepfii* (Walbaum) 1792

Orange filefish, foolfish, unicornfish

This species was the most plentiful of the filefish and triggerfish present in Rhode Island waters during the summer and fall of 1957. Over a dozen specimens were examined, ranging from 7 to 18 inches (TL). The earliest record of the orange filefish's appearance in Rhode Island waters was a 17-inch (TL) specimen speared in eight feet of water off Napatree Point on June 16, 1957, by B. Bulmer.

Family Ostraciidae

Genus *Lactophrys*

(206) *Lactophrys trigonus* (Linnaeus) 1758

Boxfish, trunkfish

**Specimens:**

Tracy (1910) has this species recorded from Narragansett Bay in 1899.

Family Tetraodontidae

Genus *Lagocephalus*

(207) *Lagocephalus laevis* Linnaeus 1766

Smooth puffer, rabbitfish, bottlefish

**Specimens:** (PLATE 72)

This southern species is not common north of Cape Hatteras and is rare in Rhode Island waters. Two smooth puffers were collected by the author in 1957. One, 15.5 inches (TL) was taken in the trap off the Point Judith breakwater on July 2, 1957; and the other, 17 inches (TL), was taken by the trawler *Jane Dore*, four miles SE of Watch Hill, on October 17, 1957.

Genus *Sphaeroides*

(208) *Sphaeroides maculatus* (Bloch and Schneider) 1801

Puffer, swellfish, globefish, snowball

**Specimens:** (PLATES 73, 74)

This is a very abundant species during summer and fall in Rhode Island waters. Large quantities are taken by trawler and trap fishermen. Anglers frequently hook this species and are familiar with its ability to inflate itself into a round sphere with air or water.

**Economic Importance:**

The tail section of this species is tasty and sometimes marketed under the name of sea squab. Usually this species is utilized with the trash fish, but occasionally some are filleted and shipped to market. During 1957, 7,414 pounds of swellfish valued at \$245, were landed as food fish at Rhode Island ports.

Genus *Cheilichthys*

(209) *Cheilichthys testudineus* (Linnaeus) 1758

Glovesfish, blowfish, tambor

**Specimens:**

This tropical species, which reaches a length of seven or eight inches (TL) has been taken at Newport, according to Tracy (1910).

(210) *Cheilichthys trichoccephalus* (Cope) 1870

Hairy blowfish

**Specimens:**

The type specimen and only specimen known of this species was a four-inch fish taken in the Gulf Stream off Newport by S. Powell, according to Tracy (1910).



Family Diodontidae

Genus *Chilomycterus*

(211) *Chilomycterus schoepfii* (Walbaum) 1792

Burrfish, porcupinefish, oysterfish

**Specimens:** (PLATE 75)

This warm water fish is an infrequent stray into Rhode Island waters in late summer and fall. During July, 1957, over a dozen specimens, six to eight inches (TL), were obtained from the Point Judith traps.

Family Molidae

Genus *Mola*

(212) *Mola mola* (Linnaeus) 1758

Oceanic sunfish, mola, headfish

**Specimens:**

This oceanic species is an occasional visitor into Rhode Island waters during the summer months. Trawler fishermen frequently report seeing this large fish basking in the sun on the surface of the water off Block Island. In July, 1954, a sunfish estimated at 1,000 pounds was taken in the traps off Point Judith. On August 29, 1953, the writer observed a large mola on the surface of the sea, three miles SE of Block Island.

Family Lophiidae

Genus *Lophius*

(213) *Lophius americanus* Cuvier and Valenciennes 1837

Anglerfish, goosefish, molykite

**Specimens:** (PLATES 4, 76)

The anglerfish is a year round resident in Rhode Island waters. During the summer of 1957, there were a few goosefish from two to four feet (TL) in each haul of the trap. This grotesque fish is common in the nets of inshore and offshore trawlers fishing on the bottom.

**Economic Importance:**

Although this species is edible, it is usually used as a trash species. During 1955, 13,300 pounds of angler fish, valued at \$277, were landed as food fish at Rhode Island ports.

Family Antennariidae

Genus *Histrio*

(214) *Histrio pictus* (Cuvier and Valenciennes) 1837

Sargassum fish, mousefish

**Specimens:**

Tracy (1910) mentions three specimens taken at the mouth of the Sakonnet River, in September, 1904. There is also a specimen at the Narragansett Marine Laboratory taken from off the Rhode Island coast.

Family Ogcocephalidae

Genus *Dibranchius*

(215) *Dibranchius atlanticus* Peters 1875

Batfish, seabat

**Specimens:**

A single specimen, captured off Block Island, is reported in Goode and Bean (1895). Specimens from Newport are mentioned in Jordan and Evermann (1896–1900).

## V. Trends in the Fish Population

The majority of the 215 species of fish in this report occur periodically in the catch of Rhode Island commercial fishermen. Landings of commercially caught fish and shellfish at Rhode Island ports during 1959 totaled 116.6 million pounds valued at \$4.0 million to the fishermen. During 1959, fish for industrial use (trash fish) other than menhaden, totaled 75 million pounds, valued at \$621,149.

Rhode Island commercial fishermen use a variety of methods in capturing their catch. The chief method employed is the otter trawl net which is used by trawl vessels. Approximately 84 per cent of the state's fish catch in 1956 was taken in the otter trawl nets. These nets, which are usually about 80 feet in length, are towed along the ocean bottom and capture a variety of local and migratory species. This method is selective for demersal fishes. During April, 1958, there were 44 trawlers fishing out of Point Judith, manned by 126 men. Trawlers also operate periodically out of Wickford, Newport and Block Island. Approximately 15 trawlers from Stonington, Connecticut fish throughout the year off the Rhode Island coast.

Another device is the stationary floating trap. There are three principal trap locations being fished in the state. They are, Point Judith, with three traps; Newport, with two traps; and Sakonnet Point, with two traps. These large floating traps are particularly adapted for the capture of pelagic species. In 1905, there were 265 fish traps being operated in Rhode Island waters; today, there are less than a dozen fish traps in operation, and these are only in operation during the spring and part of the summer and fall.

Thirdly, purse seines, from 250 feet to 2,000 feet, are used in Rhode Island waters to capture schools of menhaden. The seines

TABLE 1

## 10 Year Record of Rhode Island Fish Landings\*

	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956
Melwives	751,000	317,500	133,700	312,100	905,800	180,900	216,000	12,275	46,116	54,480
Anchovies	19,100			14,700	3,500	5,800	9,000	11,418	21,455	13,230
Bluefish	14,900	17,100	25,700	56,200	36,700	48,100	80,000	72,716	28,436	43,958
Bonito	3,800	1,200	5,200	400	400	50	13,000	89,633	11,730	164
Butterfish	1,535,400	1,440,200	1,279,400	1,021,500	1,754,100	1,923,400	1,500,000	1,395,777	2,126,092	3,169,743
Cod	674,500	790,400	1,707,300	1,226,500	1,160,600	672,500	607,000	1,071,229	799,359	533,922
Common Eel	8,500	27,600	16,100	33,300	33,500	15,300	33,000	5,239	6,532	582
Conger Eel	29,100	4,600		12,400	42,400	65,800	67,000	35,742	43,486	30,087
Flounders:										
Grey Sole	800	1,700	9,500	900	6,500	25,900	49,000	132,008	61,397	80,422
Lemon Sole	74,500		66,300	40,300	43,900	52,800	21,000	20,122	21,054	7,576
Yellowtail	2,258,700	3,292,800	1,138,200	1,028,500	723,400	1,334,500	1,041,000	1,680,761	1,448,235	2,443,541
Blackback	955,000	1,588,100	1,301,900	1,028,500	1,324,300	1,329,800	1,135,000	1,281,795	1,453,862	2,865,953
Dab	15,400	300	5,700	1,600	68,900	230,800	159,000	252,673	232,354	53,955
Fluke	332,800	405,800	469,600	1,035,900	1,188,700	1,336,200	1,043,000	2,373,785	2,151,664	1,603,562
Haddock	61,600	17,600	69,600	241,800	374,400	283,100	245,000	371,558	320,264	230,690
Herring, Sea	181,900	1,225,200	4,256,700	826,100	885,800	2,611,100	2,169,000	1,051,628	663,435	625,953
Mackerel	599,400	1,019,400	502,600	492,000	91,700	172,500	101,000	72,813	51,057	298,111
Menhaden	31,600	35,100	38,100	8,100	2,968,500	9,403,800	17,185,000	17,944,614	14,341,415	11,121,970
Pollock	41,100	29,500	36,900	146,500	44,800	67,400	13,000	7,544	19,847	11,537
Scup	2,896,400	3,799,500	2,416,800	4,467,000	4,080,600	4,393,300	5,386,000	335,329	5,903,451	4,958,707
Sea Bass	116,500	156,300	233,600	326,800	724,800	656,200	459,000	298,218	437,079	403,630
Shad	1,800	2,300	3,200	2,100	5,600	4,900	4,000	1,773	5,260	1,358
Squeteagues,										
Gray	325,800	157,800	15,700	3,800	1,000	2,000	17,000	8,142	5,232	11,666
Striped Bass	51,700	62,900	81,200	112,000	111,800	50,500	82,000	116,278	34,098	25,946
Sturgeon	600	2,000	2,600	2,900	1,800	3,600	3,000	2,763	3,795	1,851
Swallowfish	2,500	66,600	1,900	15,200	40,500	38,300	25,000	8,012	8,079	5,613
Swordfish	62,700	99,300	66,700	57,700	55,000	87,400	41,000	132,255	54,341	68,224
Tautog	61,100	30,500	27,300	46,800	43,400	53,400	30,000	40,941	38,153	55,925
Tilfish	2,400	6,300	32,700	200,500	453,500	446,900	650,000	1,067,409	1,180,698	492,909
Tuna	23,200	24,900	17,900	60,800	10,900	33,800	19,000	64,520	47,018	17,253
White Perch	41,000	4,900	24,100	27,100	15,200	13,000	9,000	7,084	4,085	500
Whiting	2,133,800	2,399,700	659,900	635,000	742,000	1,232,300	704,000	2,792,905	3,256,712	2,660,049
For Reduction	165,100	739,100	11,609,900	18,776,900	23,740,300	29,247,300	51,794,000	58,900,571	73,401,879	102,808,717

\* Species for which there were less than 2,000 lbs. landed are omitted along with trash species. Figures are based on United States Fish and Wildlife Service records.

TABLE 2

*Marine Fishes not Included in any Previously Published List of Rhode Island Ichthyofauna*

Scientific Name	Common Name
<i>Carcharodon carcharias</i> . . . . .	Maneater shark
<i>Cetorhinus maximus</i> . . . . .	Basking shark
<i>Scyliorhinus retifer</i> . . . . .	Chain dogfish
<i>Ginglymostoma cirratum</i> . . . . .	Nurse shark
<i>Sphyrna tiburo</i> . . . . .	Bonnetnose shark
<i>Prionace glauca</i> . . . . .	Great blue shark
<i>Paragaleus pectoralis</i> . . . . .	
<i>Galeocerdo cuvier</i> . . . . .	Tiger shark
<i>Raja eglenteria</i> . . . . .	Clearnose skate
<i>Raja garmani</i> . . . . .	Rosetted skate
<i>Raja senta</i> . . . . .	Smooth skate
<i>Raja radiata</i> . . . . .	Thorny skate
<i>Gymnura altavela</i> . . . . .	Butterfly ray
<i>Manta birostris</i> . . . . .	Devil ray
<i>Cyprinodon variegatus</i> . . . . .	Sheepshead minnow
<i>Gasterosteus aculeatus</i> . . . . .	Three-spined stickleback
<i>Makaira ampla</i> . . . . .	Blue marlin
<i>Calamus bajonado</i> . . . . .	Jolthead porgy
<i>Caranx bartholomaci</i> . . . . .	Yellowjack
<i>Centrolophus niger</i> . . . . .	Black ruff
<i>Antigonia capros</i> . . . . .	Boarfish
<i>Zenopsis ocellata</i> . . . . .	John Dory
<i>Macrorhamphosus scolopax</i> . . . . .	Snipefish
<i>Gobiosoma boscii</i> . . . . .	Goby
<i>Gobiosoma ginsburgi</i> . . . . .	Goby
<i>Sarda velox</i> . . . . .	Bonito
<i>Peristedion miniatum</i> . . . . .	Armored sea robin
<i>Remora brachyptera</i> . . . . .	Remora
<i>Bairdiella chrysura</i> . . . . .	Silver perch
<i>Neoliparis atlanticus</i> . . . . .	Sea snail
<i>Sebastes marinus</i> . . . . .	Rosefish
<i>Caulolatilus microps</i> . . . . .	Blanquillo
<i>Lopholatilus chamaeleonticeps</i> . . . . .	Tilefish
<i>Upeneus maculatus</i> . . . . .	Red goatfish
<i>Ablennes hians</i> . . . . .	Garfish
<i>Citharichthys artifrons</i> . . . . .	Gulf stream flounder
<i>Euthynnus allcateratus</i> . . . . .	Albacore
<i>Germo alalunga</i> . . . . .	Albacore
<i>Coryphacna hippurus</i> . . . . .	Dolphin
<i>Eupomacentrus leucostictus</i> . . . . .	Beau gregory



are used to encircle the school of fish and then the bottom of the net is closed, forming a pocket which traps the fish.

Along some of Rhode Island's coastline, haul seines are used to catch migratory species such as summer flounder, striped bass, and bluefish. Harpoons are used exclusively in the commercial capture of swordfish. Gill nets are infrequently used in the summer and fall for the capture of bluefish. Most of the common eels are captured by eel pots. Lastly, there are a few commercial fishermen who still use hand lines and trawls with hooks for codfish and pollock.

Sport fishermen, who outnumber the commercial fishermen about 100 to 1 in Rhode Island, are interested chiefly in the pursuit of five major species. They are striped bass, bluefish, tautog, flounder and weakfish. These five species, with the exception of flounder, are of minor importance to the commercial fishermen. Table 1 shows that the landings of commercial fishermen consisted mainly of butterfish, menhaden, herring, scup, cod, flounder and trash fish during the past ten years.

This present study demonstrates the presence of 40 "new" species of fish present in Rhode Island waters since the publication of Tracy's "Annotated List of Fishes of Rhode Island," in 1910. As can be seen from Table 2, the majority of these species are southern varieties, with a few exceptions. The appearance of these warm water species can be attributed to one major factor, which is an increase in the water temperature of the coastal areas of Rhode Island since 1910. Taylor, Bigelow and Graham (1957) cite the fol-

TABLE 3

*Fresh Water Fish Sometimes Found in Brackish Water of Coastal Rivers of Rhode Island*

Scientific name	Common name
<i>Salmo trutta</i> . . . . .	Brown trout
<i>Salvelinus fontinalis</i> . . . . .	Brook trout
<i>Ameiurus nebulosis</i> . . . . .	Brown bullhead
<i>Esox niger</i> . . . . .	Chain pickerel
<i>Perca flavescens</i> . . . . .	Yellow perch
<i>Micropterus salmoides</i> . . . . .	Largemouth black bass

lowing factors to verify the warming trend in New England waters:

1. A long-term upward trend in air temperatures in New England is evident from the record. The increase has been greatest for the winter months.
2. Upward trends in winter sea temperatures are shown for St. Andrews, N. B., Boothbay Harbor, Maine, and Woods Hole, Mass. The correlation of January water temperatures at Boothbay Harbor with January air temperatures at New Haven, Conn., and Eastport, Maine, indicates a long-term upward trend in surface temperatures corresponding to that for winter air temperatures.
3. Hydrographic data for the Gulf of Maine in 1953 and 1954, indicate an increase of from 1° to 5° F. throughout the water column since the period 1912-26 for most parts of the Gulf.

The presence of a few temperate and cold water species not in Tracy's list can be attributed to the greater fishing intensity now carried on in Rhode Island waters. Fifty years ago the majority of the fish were obtained by trapping or seining. Offshore fishing was done with an inefficient beam trawl or with hook and line. Today, trawl vessels can fish with large, efficient nets at variable depths, guided to their quarry with electronic fish-finding devices such as "fathometers" and "fish-finders."

Occasionally fresh water species of fish stray into the tidal brackish waters of coastal rivers. Table 3 lists fresh water species of fish which have been reported in the brackish coastal rivers of Rhode Island. Much of the data for Table 3 was obtained from Horton (1958).

Thirty-one species of fish which are included in this survey, but have not been recorded in Rhode Island waters during the past 40 years, are listed in Table 4. Included in this list are five species of flying fish. These pelagic species appear to be present in waters off Block Island, but are very difficult to capture.

A list of fish of questionable identification from Rhode Island waters appears in Table 5. These species are doubtful because they were immature specimens or their place of capture is not clear. In the case of the African filefish (*Balistes forcipatus*), only one specimen was collected in 1867. This may have been a mutation or variation of a species of North American filefish.

TABLE 4

*List of Fish Species Not Reported in Rhode Island Waters during the Past 40 Years*

Scientific name	Common name
<i>Paragaleus pectoralis</i> .....	Shark
<i>Bagre marinus</i> .....	Sea catfish
<i>Galeichthys felis</i> .....	Catfish
<i>Etrumeus sadina</i> .....	Round herring
<i>Euleptorhamphus velox</i> .....	Slender halfbeak
<i>Parexocoetus mesogaster</i> .....	Flyingfish
<i>Exocoetus speculiger</i> .....	Flyingfish
<i>Cypsilurus heterurus</i> .....	Single-bearded flyingfish
<i>Cypsilurus furcatus</i> .....	Double-bearded flyingfish
<i>Cypsilurus gibbifrons</i> .....	Flyingfish
<i>Sphyracna guachancho</i> .....	Barracuda
<i>Auxis thazard</i> .....	Frigate mackerel
<i>Scomberomorus regalis</i> .....	Cero
<i>Trachinotus carolinus</i> .....	Common pompano
<i>Epinephelus niveatus</i> .....	Snowy grouper
<i>Rypticus bistrispinus</i> .....	Soapfish
<i>Lobotes surinamensis</i> .....	Tripletail
<i>Lutianus griseus</i> .....	Grey snapper
<i>Lutianus blackfordii</i> .....	Red snapper
<i>Archosargus probatocephalus</i> .....	Sheepshead
<i>Kyphosus sectatrix</i> .....	Rudder fish
<i>Chaetodipterus faber</i> .....	Spadefish
<i>Rhombochirus osteochir</i> .....	Spearfish sucker
<i>Uluvaria subbfurcata</i> .....	Radiated shanny
<i>Cryptacanthodes maculatus</i> .....	Wrymouth
<i>Lycodes reticulatus</i> .....	Arctic eelpout
<i>Lycenchelys verrillii</i> .....	Wolf eel
<i>Lactophrys trigonus</i> .....	Boxfish
<i>Cheilichthys testudineus</i> .....	Glovefish
<i>Cheilichthys trichcephalis</i> .....	Hairy blowfish
<i>Dibranchius atlanticus</i> .....	Batfish

TABLE 5

*List of Questionable Rhode Island Fishes*

Scientific name	Common name
<i>Paragaleus pectoralis</i> .....	Shark
<i>Galeichthys felis</i> .....	Sea catfish
<i>Balistes forciatus</i> .....	Powell's filefish
<i>Lactophrys trigonus</i> .....	Trunkfish
<i>Cheilichthys trichcephalus</i> .....	Hairy blowfish

## VI. Summary

1. Two hundred and fifteen species of fish have been observed or reported in the coastal waters of Rhode Island; 40 of these had not been previously recorded in Tracy's (1910) list.

2. Four species noted in this volume had not been definitely reported from New England waters in any previous book. These species are *Calamus bajonado*, *Caranx bartholomaci*, *Gobiosoma ginsburgi* and *Upeneus maculatus*.

3. One species, *Eupomacentrus leucostictus*, described in this study had not been reported in New England waters since 1899.

4. Four possible record sized fish from Rhode Island waters have been described in this study. They are *Lagodon rhomboides*, (14.5 inches TL); *Balistes carolinensis*, (19 inches TL); *Cyclopterus lumpus*, (23.5 inches TL); and *Macrorhamphosus scolopax*, (5.5 inches TL).

## VII. Bibliography

Ackerman, Edward A.

1941. New England fishing industry. 303 pp., Univ. of Chicago Press, Chicago.

Arnold, Edgar L., Jr.

1949. Unusual occurrence of fish on New England banks. *Copeia*, No. 4, pp. 299-300.

1951. Northward dispersal of warm-water marine fishes in southern New England during the summer of 1949. *Copeia*, No. 1, pp. 87-88.

Bean, Tarleton, H.

1901. Catalogue of the fishes of Long Island with notes upon their distribution, common names, habits, and rates of growth. 6th Ann. Rept. Forest Fish & Game Comm. of N. Y. State, pp. 373-478.

Beebe, William, and Tee-Van, John.

1928. The fishes of Port-Au-Prince Bay, Haiti, with a summary of the known species of marine fish of the island of Haiti and Santo Domingo. *Zoologica*, Vol. 10, No. 1, 279 pp., illus.

1933. Field book of the shore fishes of Bermuda. 337 pp., 343 illus. G. P. Putnam's Sons, New York.

Berg, Leo S.

1947. Classification of fishes, both recent and fossil. 517 pp., illus. Edwards Bros., Inc. Ann Arbor, Mich.

Bigelow, Henry B., et al.

1948. Lancelets, by Bigelow, H. B., and Farfante, I. P., 28 pp., 3 figs.; Cyclostomes and sharks, by Bigelow, H. B. and Schroeder, W. C., pp. 29-257, figs. 4-106; Fishes of the western North Atlantic. Part I. Mem. Sears Foundation Marine Res. No. 1.

Bigelow, Henry B., and Schroeder, William C.

1953a. Sawfishes, guitarfishes, skates and rays; Chimaeroids, xv 588 pp., 127 figs.; Fishes of the western North Atlantic. Part II. Mem. Sears Foundation Marine Res. No. 1.

1953b. Fishes of the Gulf of Maine. U. S. Fish and Wildlife Service, Fishery Bull. 74, vol. 53, pp. i-vii, 1-577, 288 figs.

Blair, Frank W.; Blair, Albert P.; Brodkorb, Pierce; Cagle, Fred R.; and Moore, George A.

1957. Vertebrates of the United States. McGraw-Hill Book Co., New York.

Breder, C. M., Jr.

1929. Field book of marine fishes of the Atlantic Coast from Labrador to Texas. 332 pp., 403 illus., 8 colored pls. G. P. Putnam's Sons, New York.

Bumpus, H. C.

1900. A list of the fishes of Narragansett Bay. Rept. of Commissioners of Inland Fisheries for 1900. Providence, R. I.

Chute, W. H., et al.

1948. Common and scientific names of the better known fishes of the United States and Canada. Am. Fish. Soc., Spec. Publ. 1, pp. 1-45.

Edwards, Robert L.

1958. Species composition of the 1957 industrial trawl fish landings in New England.

Interim Report No. 2. N. Atlantic Fishery Investigations Woods Hole, 23 pp.

Evermann, Barton W., and Marsh, Millard C.

1902. The fishes of Puerto Rico. Bull. U. S. Fish. Comm. for 1900, vol. 20, pt. 1, pp. 49-350, 112 figs., 49 colored pls.

Fowler, Henry W.

1906. The fishes of New Jersey. Ann. Rep. New Jersey State Mus., 1905, pt. 2, pp. 35-477, 103 pls., 81 figs.

1917. Notes on New England fishes, Proc. Boston Soc. Nat. Hist., Vol. 35, No. 4 pp. 109-138, 8 figs.

Ginsburg, Isaac.

1952. Flounders of the Genus *Paralichthys* and related genera in American waters.

U. S. Fish and Wildlife Service Bull. 71, vol. 52, pp. 267-351, 15 pls.

Goode, George Brown.

1884. Natural history of useful aquatic animals. Pt. 3. The food fishes of the U. S. Fish. Ind. of U. S. Sec. 1, pp. 169-549, 610-612, 629-681.

Goode, G. B., and Bean, T. H.

1895. Oceanic ichthyology. U. S. Nat. Mus. Special Bull. 2, text, 553 pp., Atlas, 417 figs.

Gordon, Bernard L.

1954a. My bout with a lumpfish. Natural History, Vol. 63, No. 2, pp. 68-71.

1954b. The hungry anglerfish. Nature Magazine, Vol. 47, No. 9, pp. 469-471.

1954c. Lumpfish are good eating. Maine Coast Fisherman, Vol. 8, No. 8, pg. 28.

1954d. Goosefish a hearty eater. Maine Coast Fisherman, Vol. 8, No. 9, pg. 32.

1955a. Tilefish taste like chops. Maine Coast Fisherman, Vol. 9, No. 6.

1955b. Hake live in scallop shells. Maine Coast Fisherman, Vol. 9, No. 7, pg. 8.

1955c. Good for itch (angel shark). Maine Coast Fisherman, Vol. 9, No. 8, pg. 8.

1955d. Butterfish eat sandfleas. Maine Coast Fisherman, Vol. 9, No. 9, pg. 8.

1955e. Lamprey eel not an eel. Maine Coast Fisherman, Vol. 9, No. 10, pg. 8.

1955f. Scup eggs hatch in 40 hours. Maine Coast Fisherman, Vol. 9, No. 11, pg. 28.

1955g. Blowfish epicure's delight. Maine Coast Fisherman, Vol. 9, No. 12, pg. 32.

1955h. Old "Rough Tooth" (maneater shark). Maine Coast Fisherman, Vol. 10, No. 1, pg. 28.

1955i. Stingaree well armed. Maine Coast Fisherman, Vol. 10, No. 2, pg. 28.

1955j. Remora a hitchhiker. Maine Coast Fisherman, Vol. 10, No. 3, pg. 9.

1955k. Anglers and eaters prize bonito. Maine Coast Fisherman, Vol. 10, No. 4.

1955l. Kingfish favor warm water. Maine Coast Fisherman, Vol. 10, No. 5, pg. 28.

1955m. When the tilefish died. Natural History, Vol. 64, No. 5, pp. 273-275.

1955n. The vicious sea lamprey. The Fisherman, Vol. 6, No. 10, pp. 32-37.

1956a. Dad pipefish minds kids. Maine Coast Fisherman, Vol. 10, No. 6.

1956b. Marlin powerful swimmer. Maine Coast Fisherman, Vol. 10, No. 7, pg. 9.

- 1956c. Sea bass are good eating. *Maine Coast Fisherman*, Vol. 10, No. 8.
- 1956d. Glutton of the sea (bluefish). *Maine Coast Fisherman*, Vol. 10, No. 9, pg. 9.
- 1956e. Shad the travelling fish. *Maine Coast Fisherman*, Vol. 10, No. 10, pg. 9.
- 1956f. Dogfish ruin fish nets. *Maine Coast Fisherman*, Vol. 10, No. 11, pg. 9.
- 1956g. Blackfish a bottom dweller. *Maine Coast Fisherman*, Vol. 10, No. 12, pg. 9.
- 1956h. That sea serpent may be a basking shark. *Maine Coast Fisherman*, Vol. 11, No. 1.
- 1956i. . . it's still weakfish. *Maine Coast Fisherman*, Vol. 11, No. 2.
- 1956j. Tuna, torpedo of the deep. *Maine Coast Fisherman*, Vol. 11, No. 3.
- 1956k. Lashing tail brings food to thresher shark. *Maine Coast Fisherman*, Vol. 11, No. 4.
- 1956l. The remora, a fish story old but ever new. *Frontiers. Acad. Nat. Sci. Phila.*, Vol. 20, No. 3, pp. 76-78, 95.
- 1956m. The paternal pipefish. *Nature Magazine*, Vol. 49, No. 5, pp. 243-244, 276.
- 1956n. The amazing angel shark. *Bull. of International Oceanographic Foundation*, Vol. 2, No. 2, pp. 109-111.
- 1956o. Sea-going hitchhiker. *The Fisherman*, Vol. 7, No. 11, pp. 66-69.
- 1957a. The migrant mackerel. *Maine Coast Fisherman*, Vol. 11, No. 6, pg. 10.
- 1957b. The menhaden. *Maine Coast Fisherman*, Vol. 11, No. 7, pg. 10.
- 1957c. The cod, Cape Cod turkey. *Maine Coast Fisherman*, Vol. 11, No. 8, pg. 10.
- 1957d. The nimble pollock. *Maine Coast Fisherman*, Vol. 11, No. 9, pg. 10.
- 1957e. The spiny boxfish. *Maine Coast Fisherman*, Vol. 11, No. 10, pg. 10.
- 1957f. The skate. *Maine Coast Fisherman*, Vol. 11, No. 11, pg. 10.
- 1957g. The striped a favorite fish. *Maine Coast Fisherman*, Vol. 12, No. 4, pg. 10.
- 1957h. The common cunner. *Maine Coast Fisherman*, Vol. 12, No. 5, pg. 10.
- 1957i. The eel. *Maine Coast Fisherman*, Vol. 12, No. 6, pg. 10.
- 1957j. Titan of the seas. *Natural History*, Vol. 66, No. 5, pp. 272-274.
- 1957k. The migratory shad. *The Fisherman*, Vol. 8, No. 2, pp. 14-16, 80.
- 1957l. A tale of thunnus. *The Fisherman*, Vol. 8, No. 9, pp. 25-26, 95.
- 1957m. The spiny boxfish. *Frontiers*, Vol. 22, No. 1, pp. 21, 22.
- 1957n. The skate, primitive fish. *Frontiers*, Vol. 22, No. 2, pp. 38-39, 64.
- 1958a. The flavorful smelt. *Maine Coast Fisherman*, Vol. 12, No. 6, pg. 10.
- 1958b. The sturgeon. *Maine Coast Fisherman*, Vol. 12, No. 7, pg. 10.
- 1958c. The rabbitfish. *Maine Coast Fisherman*, Vol. 12, No. 8, pg. 10.
- 1958d. The ocean pout. *Maine Coast Fisherman*, Vol. 12, No. 9, pg. 10.
- 1958e. The omnivorous codfish. *Nature Magazine*, Vol. 51, No. 4, pp. 205-207.
- 1958f. The John Dory. *Maine Coast Fisherman*, Vol. 12, No. 10.
- Graham, Joseph.
1958. Rhode Island trash fishery. (ms.) Narragansett Marine Laboratory Library, Kingston, R. I.
- Guenther, Klaus, and Deckart, Kurt.
1956. *Creatures of the deep sea*. 222 pp., 140 figs., colored pls. Charles Scribner's Sons, New York.
- Hildebrand, Samuel F., and Schroeder, William C.
1928. *Fishes of Chesapeake Bay*. *Bull. U. S. Bur. Fish.* for 1927, Vol. 43, pt. 1, 388 pp., 211 figs.
- Horton, Donald
1958. Masters Thesis. University of Rhode Island.



- Johnson, Frank M.  
1902. Forest, lake and river, the fishes of New England and Eastern Canada. 2 vols., Privately printed (ltd. to 350 copies) Boston. 681 pp.
- Jordan, David S.  
1905. A guide to the study of fishes. 2 vols., 427 illus. Henry Holt & Co., New York.  
1925. Fishes. 773 pp., 673 figs., 18 pls. D. Appleton and Co., New York.
- Jordan, David S., and Evermann, B. W.  
1896-1900. The fishes of North and Middle America, a descriptive catalogue of the species of fishlike vertebrates found in the waters of North America, north of the isthmus of Panama. U. S. Nat. Mus. Bull. 47, in 4 vols., 3,313 pp., 392 pls.  
1902. American food and game fishes. 573 pp., 221 figs., 66 pls., 9 color pls. Doubleday, Page & Co., N. Y.
- Jordan, David Starr; Evermann, Barton Warren; and Clark, Howard Walton.  
1930. Checklist of the fishes and fishlike vertebrates of North and Middle America north of the northern boundary of Venezuela and Columbia. Rep. U. S. Comm. Fish. 1928 with Appendices, pt. 2, Doc. No. 1055, pp. 1-670. (Reprinted in 1956.)
- Kendall, William C.  
1914-1935. The fishes of New England: Mem. Boston Soc. Nat. Hist., vol. 8, pt. 1, 1914, 103 pp., 7 col. pls.; vol. 9, pt. 2, 1935, 166 pp., 11 col. pls.
- LaMonte, Francesca.  
1946. North American game fishes. 202 pp., 71 pls. Doubleday & Co., Garden City, N. Y.
- Linsley, J. H.  
1844. Catalogue of the fishes of Connecticut. Amer. Jour. Sci. and Arts, vol. 47, 71 pp.
- McFarland, Raymond.  
1911. A history of New England fisheries. 457 pp. Univ. of Pennsylvania.
- Merriman, Daniel M.  
1941. Studies on the striped bass. Fish Bull. 35 U.S.F.W.S., U.S.G.P.O., Washington, D. C., 77 pp.
- Merriman, Daniel M. and Sclar, Ruth.  
1952. The pelagic fish eggs and larvae of Block Island Sound. Bull. Bingham Ocean. Coll., vol. XIII, art. 3, pp. 165-220.
- Moore, Emmeline.  
1947. The sand flounder *Lophopsetta aquosa* (Mitchill); a general study of the species with special emphasis on age determination by means of scales and otoliths. Bull. Bingham Ocean. Coll., vol. XI, art. 3, pp. 1-79.
- Morrow, James E., Jr.  
1951. The biology of the longhorn sculpin *Myoxocephalus octodecimspinosus* (Mitchill); with a discussion of the southern New England "trash" fishery. Bull. Bingham Ocean. Coll., vol. XIII, art. 2, pp. 1-89.  
1956. The jolthead porgy, *Calamus bajonado*, Bloch and Schneider, a first record for New England waters. Copeia, No. 3, pp. 194-195.
- Nichols, J. T. and Breder, C. M., Jr.  
1927. The marine fishes of New York and Southern New England. Zoologica, New York Zool. Soc., vol. 9, No. 1, New York, 192 pp.

- Norman, J. R.  
1931. A history of fishes. E. Benn, Ltd. London, 463 pp. illus.
- Norman, J. R. and Fraser, F. C.  
1949. Field book of giant fishes. New York, G. P. Putnam, 376 pp.
- Olsen, Y. H. and Merriman, Daniel.  
1946. The biology and economic importance of the ocean pout *Macrozoarces americanus* (Bloch and Schneider) Bull. Bingham Ocean. Coll., vol. 9, art. 4, pp. 1-184.
- Raney, E. C.; Tresselt, E. F.; Hollis, E. H.; Vladikov, V. D.; and Wallace, D. H.  
1952. The striped bass. Bull. Bingham Ocean. Coll., vol. 14, art. 1, 177 pp.
- Rhode Island Landings.  
1954-1958. U.S.F.W.S. and R. I. Div. of Fish and Game, Washington, D. C.
- Rounsefell, G. A. and Everhart, W. H.  
1953. Fishery science, its methods and applications. Wiley, New York, 444 pp.
- Rounsefell, G. A. and Stringer, L. D.  
1945. The New England alewife fisheries. Trans. Am. Fish. Soc. 73: 394-424.
- Sanders, Howard L.  
1952. The herring (*Clupea harengus*) of Block Island Sound. Bull. Bingham Ocean. Coll., vol. 13, art. 3, pp. 220-237.
- Schultz, Leonard P. (with Stern, Edith M.)  
1948. The ways of fishes. 264 pp., illus. D. Van Nostrand Co., New York.
- Sharp, B. and Fowler, H. W.  
1905. The fishes of Nantucket. Proc. Acad. Nat. Sci. Vol. 56. Phil., pp. 504-512.
- Storer, David H.  
1839. A report on the fishes of Massachusetts. Bost. Jour. Nat. Hist., Vol. 2, pp. 289-558.
1867. A history of the fishes of Massachusetts, Cambridge and Boston, 287 pp.
- Taylor, Clyde C.; Bigelow, H. B. and Graham, H. B.  
1957. Climatic trends and the distribution of marine animals in New England. U. S. Fish and Wildlife Service, Fishery Bull. 115, vol. 57, pp. 293-345.
- Taylor, Harden F.; Marshall, N.; Ellison, W. A.; Roelofs, E. W.; and LaMonte, P.  
1951. Survey of marine fisheries of North Carolina, with a comprehensive view of the economics of national and world fisheries, 555 pp. Univ. North Carolina Press.
- Tracy, Henry C.  
1910. Annotated list of fishes known to inhabit the waters of Rhode Island. 40th Ann. Rept. Comm. Inland Fisheries, Rhode Island, pp. 35-176.
- Tressler, Donald K. and Lemon, James McW.  
1951. Marine products of commerce; their acquisition, handling, biological aspects and the science and technology of their preparation and preservation . . . 2d ed. rev. and enl. Reinhold, 782 pp., illus.
- Warfel, H. E. and Merriman, D.  
1944. An analysis of the fish population of the shore zone. Bull. Bingham Ocean. Coll. Vol. IX, art. 2, pp. 1-19.

## VIII. Acknowledgements

The writer wishes to express his gratitude and appreciation to Donald J. Zinn, Saul B. Saila, and Robert A. DeWolf for their untiring assistance and excellent counsel in this study.

Thanks are also due to John A. Rankin, Jr. for making available to the writer fish specimens in the collection of the Zoology Department of the University of Connecticut.

The author wishes to acknowledge communications from the following individuals regarding the fish collections at their institutions: Leonard P. Schultz, Curator of fishes, Smithsonian Institution; Francesca LaMonte, Associate Curator of Fishes, American Museum of Natural History; John Tee Van, General Director, New York Zoological Society Aquarium; Henry W. Fowler, Curator of Fishes, The Academy of Natural Sciences of Philadelphia; William C. Schroeder, Harvard Museum of Comparative Zoology; Daniel Merriman, Bingham Oceanographic Laboratory.

The writer would like to express his gratitude to the commercial fishermen of Rhode Island who contributed data and specimens to this study, especially to Willis Clark, Theophilus Silva and Ellery Thompson.

The author's thanks are due Mary M. Keeffe, whose helpful suggestions and encouragement were a great aid in the preparation of this book. Herbert Perluck's aid in checking the manuscript is appreciated.

Lastly, the writer would like to acknowledge the assistance of Kay Donahue, typist, his wife, Esther, Joseph Gordon and Robert J. Daily in the production of this volume.

## IX. Index

	PAGE		PAGE
albacore.....	47, 48	black drum.....	65
false.....	47	blackfish.....	71
long-finned.....	48	black flatfish.....	41
alewife.....	23	black grunt.....	60
alligator fish.....	69	black perch.....	59
amberfish.....	54	black pilot.....	65
amberjack.....	53, 54	black ruff.....	53
American cel.....	29	black sea bass.....	59
American John Dory.....	41	blackwing.....	32
anchovy.....	26	blenny.....	76
striped.....	27	blanquillo.....	66
angel fish.....	72	blowfish.....	79
angel shark.....	15	blueback.....	22, 24
anglerfish.....	80	blue dog.....	13
Arctic eelpout.....	76	bluefin tuna.....	48
armored sea robin.....	70	bluefish.....	57
Atlantic salmon.....	27	Boston.....	35
		blue shark.....	8, 13
bajonado.....	62	bluntnosed flying fish.....	33
barn-door skate.....	16	boar fish.....	67
barracuda.....	43	bonyfish.....	25
northern.....	43	bonito.....	47
barrelfish.....	52	striped.....	48
basking shark.....	10	bonnethead shark.....	14
bass, sea.....	59	Boston bluefish.....	35
striped.....	57	Boston hake.....	35
bastard cusk.....	75	bottlefish.....	78
batfish.....	81	boxfish.....	78
beau gregory.....	65	bream.....	62
bergall.....	71	brier skate.....	17
big-eyed scad.....	55	broadbill.....	50
big-eye.....	60	broad killyfish.....	30
deep.....	60	brook trout.....	27
big skate.....	17	brown shark.....	13
billfish.....	31, 32, 50	buckie.....	23
blackback.....	24	bullseye.....	46
blackback flounder.....	39	bunker.....	25
black bass.....	59	burrfish.....	80

	PAGE		PAGE
butterfish.....	52	eagle ray.....	19
butterfly fish.....	72	eastern pickerel.....	28
butterfly ray.....	19	eel, American.....	29
		conger.....	29
Canadian plaice.....	37	cusk.....	75
catalufa.....	60	fresh-water.....	29
catfish, gafftopsail.....	21	sea.....	29
sea.....	21	wolf.....	76
cereen.....	49	eelback flounder.....	40
chain dogfish.....	11	eelpout.....	76
chicken halibut.....	37	Arctic.....	76
chickret.....	63	electric ray.....	16
chogy.....	71	eyed skate.....	17
chopper.....	57		
chub mackerel.....	46	false albacore.....	47
cigarfish.....	54	filefish.....	78
cod.....	34	orange.....	78
rock.....	34	flatfish.....	39
tom.....	34	flounder, blackback.....	39
conger eel.....	29	craig.....	40
congo eel.....	76	four-spotted.....	38
corsetfish.....	45	Gulf Stream.....	41
cow-nosed ray.....	19	sand.....	40
cow-pilot.....	66	smooth.....	40
crampfish.....	16	summer.....	37
crevalle.....	54	windowpane.....	40
croaker.....	64	winter.....	39
cunner.....	71	witch.....	40
cusk.....	36	fluke.....	37
bastard.....	75	flying fish.....	32, 33, 71
cusk eel.....	75	flying gurnard.....	71
cutlassfish.....	50	foolfish.....	78
		four-bearded rockling.....	36
		four-spined stickleback.....	44
dab, American.....	37	four-spotted flounder.....	38
rough.....	37	frigate mackerel.....	47
demoiselle.....	66	frostfish.....	33, 34
devil fish.....	68		
devil ray.....	20	gafftopsail catfish.....	21
dogfish.....	15	garfish.....	31
chain.....	11	gar, silver.....	31
shark.....	7	ghostfish.....	75
smooth.....	11	globefish.....	79
spiny.....	15	glut herring.....	24
dollarfish.....	52, 55, 56	goatfish.....	74
dolphin.....	51	goby, naked.....	73
doormat.....	37	Ginsburg's.....	73
drum, black.....	65	goggle-eyed scad.....	55
dusky shark.....	13	goosefish.....	80

	PAGE		PAGE
grayfish . . . . .	15	lamprey, sea . . . . .	7
gray snapper . . . . .	61	lancetfish . . . . .	29
gray sole . . . . .	40	launce . . . . .	74
greenback . . . . .	24	leather jacket . . . . .	56
ground shark . . . . .	7	leopard shark . . . . .	12
grouper . . . . .	59	leopard skate . . . . .	17
grunt . . . . .	60	ling . . . . .	35, 76
grubby sculpin . . . . .	67	little sculpin . . . . .	67
gulf stream flounder . . . . .	41	little skate . . . . .	17
gunnel . . . . .	75	little sturgeon . . . . .	20
gurnard . . . . .	70	little tunny . . . . .	47
flying . . . . .	71	lizard fish . . . . .	28
haddock . . . . .	34	long-finned albacore . . . . .	48
hairy blowfish . . . . .	79	lookdown . . . . .	56
hake, Boston . . . . .	35	lump . . . . .	69
red . . . . .	35	lumpfish . . . . .	69
spotted . . . . .	36	lump sucker . . . . .	69
squirrel . . . . .	35	mackerel . . . . .	46
white . . . . .	35	chub . . . . .	46
halfbeak . . . . .	31	frigate . . . . .	47
halibut . . . . .	37	horse . . . . .	48
hammerhead . . . . .	14	painted . . . . .	49
handsawfish . . . . .	29	Spanish . . . . .	49
hardhead . . . . .	46, 64	mackerel scad . . . . .	54
hardtail . . . . .	54	mademoiselle . . . . .	64
harvestfish . . . . .	52	mako, Atlantic . . . . .	8
headfish . . . . .	80	maneater . . . . .	9
herring, big-eyed . . . . .	21	manta ray . . . . .	20
glut . . . . .	24	marlin, white . . . . .	51
river . . . . .	23	menhaden . . . . .	25
round . . . . .	22	minnow, salt-water . . . . .	30
sea . . . . .	22	sheepshead . . . . .	30
shad . . . . .	24	mola . . . . .	80
thread . . . . .	25	molykite . . . . .	80
hickory shad . . . . .	23	monkfish . . . . .	15
hickory jack . . . . .	23	moonfish . . . . .	55, 56, 72
hogchoker . . . . .	41	mousefish . . . . .	81
horse mackerel . . . . .	48	mullet . . . . .	43
jack . . . . .	54	jumping . . . . .	43
jack crevalle . . . . .	54	red . . . . .	74
John Dory . . . . .	41	silver . . . . .	43
jolt-head porgy . . . . .	62	white . . . . .	43
killifish . . . . .	30	mummichog, common . . . . .	30
kingfish . . . . .	49, 65	striped . . . . .	30
king hake . . . . .	36	mummy . . . . .	30
king whiting . . . . .	65	needlefish . . . . .	31, 32
		New England sea snail . . . . .	69

	PAGE		PAGE
nine-spined stickleback.....	44	ribbonfish.....	50
northern barracuda.....	43	robin.....	70
numbfish.....	16	rock cod.....	34
		rock eel.....	75
ocean perch.....	67	rockfish.....	57, 75
ocean pout.....	76	rockling, four-bearded.....	36
ocean sunfish.....	80	rosefish.....	67
oysterfish.....	80	rosetted skate.....	17
parche.....	72	rough scad.....	55
perch, ocean.....	67	round herring.....	22
sand.....	64	round robin.....	54
silver.....	64	rudderfish.....	52, 53, 63
white.....	59	runner.....	54
pickerel.....	28	rusty dab.....	38
pilotfish.....	53		
pinfish.....	62	sailor's choice.....	62
pipefish, common.....	45	salmon, Atlantic.....	27
plaice.....	37, 40	salter.....	27
pogy.....	25	sand bar shark.....	13
polefish.....	52	sand dab.....	40
pollock.....	35	sand eel.....	74
pompano, common.....	57	sand flounder.....	40
round.....	56	sand launce.....	74
porbeagle.....	8	sand perch.....	64
porcupine fish.....	80	sand shark.....	7
porgy.....	61	sand pike.....	28
pout, eel.....	76	sardine.....	22
ocean.....	76	sargassum fish.....	81
Powell's filefish.....	77	saurel.....	55
prickly skate.....	17	saury.....	32
puffer.....	79	sawbelly.....	23
		scabbardfish.....	50
rabbitfish.....	78	scad.....	54
radiated shanny.....	75	sculpin, Arctic.....	68
raven, sea.....	68	daddy.....	68
ray, butterfly.....	19	gray.....	68
cow-nosed.....	19	Greenland.....	68
devil.....	20	little.....	67
eagle.....	19	longhorn.....	68
electric.....	16	shorthorn.....	68
sting.....	18	scup.....	61
red bream.....	67	sea bass.....	59
redfish.....	67	sea bat.....	81
red goatfish.....	74	sea catfish.....	21
red hake.....	35	sea eel.....	29
red mullet.....	74	sea herring.....	22
red raven.....	68	sea horse.....	45
red snapper.....	61	sea lamprey.....	7
remora.....	73	sea perch.....	59



	PAGE
sea poacher.....	69
sea raven.....	68
sea robin.....	70
armored.....	70
common.....	70
striped.....	70
sea snail.....	69
striped.....	70
sea sturgeon.....	20
sea trout.....	27, 63
sergeant-major.....	66
shad.....	24
herring.....	25
hickory.....	23
shanny.....	75
shark.....	
angel.....	15
basking.....	10
blue.....	8, 13
bone.....	10
bonnet.....	14
brown.....	13
carpet.....	11
dogfish.....	7
dusky.....	13
hammerhead.....	14
leopard.....	12
mackerel.....	8
nurse.....	11
sand.....	7
tiger.....	12
thresher.....	10
white.....	9
shark pilot.....	53
shark remora.....	73
sharp-nosed skate.....	16
sheepshead.....	63
sheepshead minnow.....	30
shiner.....	42
short-nosed sturgeon.....	20
short-wing flying fish.....	32
shovelhead.....	14
shovelnose.....	13
silver gar.....	31
silver hake.....	33
silver king.....	21
silver perch.....	64
silverside.....	42
waxen.....	42

	PAGE
single bearded flying fish.....	32
skate, barn door.....	16
skate, big.....	17
brier.....	17
eyed.....	17
leopard.....	17
little.....	17
prickly.....	17
rossetted.....	17
smooth-tailed.....	18
spotted.....	17
starry.....	18
summer.....	17
thorny.....	18
winter.....	17
skipjack.....	31, 47
smelt.....	27
smooth dogfish.....	11
smooth flounder.....	40
smooth puffer.....	78
smooth-tailed skate.....	18
snapper.....	57, 61
snipefish.....	42
snowball.....	79
snowy grouper.....	59
soapfish.....	60
sole.....	41
spadefish.....	72
Spanish mackerel.....	49
spearfish sucker.....	74
sperling.....	42
spiny dogfish.....	15
spot.....	64
spotted hake.....	36
spotted grouper.....	59
spotted skate.....	17
squeteague.....	63
squirrel hake.....	35
starfish.....	52
starry skate.....	18
stickleback.....	44
four-spined.....	44
nine-spined.....	44
three-spined.....	44
two-spined.....	44
stingaree.....	18
sting ray.....	18
striped bass.....	57
striped bonito.....	48

	PAGE		PAGE
striped mullet.....	43	trunkfish.....	78
striped mummichog.....	30	tuna.....	48
striper.....	57	tunny.....	48
sturgeon, little.....	20	tusk.....	36
sea.....	20	two-spined stickleback.....	44
short-nosed.....	20		
summer flounder.....	37	ulva-fish.....	75
summer skate.....	17	unicorn fish.....	78
sundial.....	40		
sunfish, oceanic.....	80	watermelon.....	47
swellfish.....	79	weakfish.....	63
swiveltail.....	10	whip-tailed shark.....	10
swordfish.....	50	whitebait.....	42
swordfish sucker.....	73	white hake.....	35
		white marlin.....	51
tarpon.....	21	white perch.....	59
tautog.....	71	white shark.....	9
ten pounder.....	21	whiting.....	33
thorny skate.....	18	windowpane.....	40
threadfin.....	56	winter flounder.....	39
thread herring.....	25	winter skate.....	17
thresher.....	10	witch flounder.....	40
tiger shark.....	12	wolf eel.....	76
tilefish.....	66	wolfish.....	75
tinker.....	46	wrymouth.....	75
toadfish.....	77		
torpedo.....	16	yellow jack.....	54, 55
triggerfish.....	77	yellowtail.....	38, 64
tripletail.....	60, 72		

## INDEX TO SCIENTIFIC NAMES

	PAGE		PAGE
<i>Ablennes hians</i> .....	31	<i>Anchoa mitchilli</i> .....	26
<i>Abudefduf marginatus</i> .....	66	<i>Anguilla rostrata</i> .....	29
<i>Achirus fasciatus</i> .....	41	<i>Antigonia capros</i> .....	67
<i>Acipenser brevirostrum</i> .....	20	<i>Apeltes quadracus</i> .....	44
<i>Acipenser sturio</i> .....	20	<i>Archosargus probatocephalus</i> .....	63
<i>Alectis crinitus</i> .....	56	<i>Aspidophoroides monopterygius</i> .....	69
<i>Alepisaurus ferox</i> .....	29	<i>Auxis thazard</i> .....	47
<i>Alopias vulpinus</i> .....	10		
<i>Alosa sapidissima</i> .....	24	<i>Bagre marinus</i> .....	21
<i>Alutera schoepfii</i> .....	78	<i>Bairdiella chrysura</i> .....	64
<i>Ameiurus nebulosis</i> .....	85	<i>Balistes carolinensis</i> .....	77
<i>Ammodytes americanus</i> .....	74	<i>Balistes forcipatus</i> .....	77
<i>Anarhichas lupus</i> .....	75	<i>Brevortia tyrannus</i> .....	25
<i>Anchoa hepsetus</i> .....	27	<i>Brosme brosme</i> .....	36

	PAGE		PAGE
<i>Calamus bajonado</i> .....	62	<i>Fundulus heteroclitus</i> .....	30
<i>Caranx bartholomaei</i> .....	55	<i>Fundulus majalis</i> .....	30
<i>Caranx crysos</i> .....	54		
<i>Caranx hippos</i> .....	54	<i>Gadus callarias</i> .....	34
<i>Carcharias taurus</i> .....	7	<i>Galeichthys felis</i> .....	21
<i>Carcharhinus milberti</i> .....	13	<i>Galeocerdo cuvier</i> .....	12
<i>Carcharhinus obscurus</i> .....	13	<i>Gasterosteus aculeatus</i> .....	44
<i>Carcharodon carcharias</i> .....	9	<i>Gasterosteus wheatlanti</i> .....	44
<i>Caulolatilus microps</i> .....	66	<i>Germo alalunga</i> .....	48
<i>Centrolophus niger</i> .....	53	<i>Ginglymostoma cirratum</i> .....	11
<i>Centropristes striatus</i> .....	59	<i>Glyptocephalus cynoglossus</i> .....	40
<i>Cetorhinus maximus</i> .....	10	<i>Gobiosoma bosci</i> .....	73
<i>Chaetodipterus faber</i> .....	72	<i>Gobiosoma ginsburgi</i> .....	73
<i>Chaetodon ocellatus</i> .....	72	<i>Gymnura altavela</i> .....	19
<i>Cheilichthys testudineus</i> .....	79		
<i>Cheilichthys trichcephalus</i> .....	79	<i>Hemitripterus americanus</i> .....	68
<i>Chilomycterus schoepfii</i> .....	80	<i>Hippocampus hudsonius</i> .....	45
<i>Citharichthys arcifrons</i> .....	41	<i>Hippoglossoides platessoides</i> .....	37
<i>Clupea harengus</i> .....	22	<i>Hippoglossus hippoglossus</i> .....	37
<i>Conger oceanica</i> .....	29	<i>Histrio pictus</i> .....	81
<i>Coryphaena hippurus</i> .....	51	<i>Hyporhamphus unifasciatus</i> .....	31
<i>Cryptacanthodes maculatus</i> .....	75		
<i>Cyclopterus lumpus</i> .....	69	<i>Isurus oxyrinchus</i> .....	8
<i>Cynoscion regalis</i> .....	63		
<i>Cyprinodon variegatus</i> .....	30	<i>Kyphosus sectatrix</i> .....	63
<i>Cypselurus furcatus</i> .....	33		
<i>Cypselurus gibbifrons</i> .....	33	<i>Lactophrys trigonus</i> .....	78
<i>Cypselurus heterurus</i> .....	32	<i>Lagocephalus laevis</i> .....	78
		<i>Lagodon rhomboides</i> .....	62
<i>Dactylopterus volitans</i> .....	71	<i>Lamna nasus</i> .....	8
<i>Dasyatis centroura</i> .....	18	<i>Leiostomus xanthurus</i> .....	64
<i>Decapterus macarellus</i> .....	54	<i>Limanda ferruginea</i> .....	38
<i>Decapterus punctatus</i> .....	54	<i>Liopsetta putnami</i> .....	40
<i>Dibranchius atlanticus</i> .....	81	<i>Liparis liparis</i> .....	70
		<i>Lobotes surinamensis</i> .....	60
<i>Echeneis naucrates</i> .....	73	<i>Lopholatilus chamaeleonticeps</i> .....	66
<i>Elops saurus</i> .....	21	<i>Lophius americanus</i> .....	80
<i>Enchelyopus cimbrius</i> .....	36	<i>Lophopsetta maculata</i> .....	40
<i>Epinephelus niveatus</i> .....	59	<i>Lutianus blackfordii</i> .....	61
<i>Esox niger</i> .....	28	<i>Lutianus griseus</i> .....	61
<i>Etrumeus sadina</i> .....	22	<i>Lycenchelys verrillii</i> .....	76
<i>Euleptorhamphus velox</i> .....	31	<i>Lycodes reticulatus</i> .....	76
<i>Eupomacentrus leucostictus</i> .....	65		
<i>Euthynnus alleteratus</i> .....	47	<i>Macrorhamphosus scolopax</i> .....	42
<i>Exocoelus speculiger</i> .....	32	<i>Macrozoarces americanus</i> .....	76
		<i>Makaira albida</i> .....	51
<i>Fistularia tabacaria</i> .....	45	<i>Makaira ampla</i> .....	51
<i>Fundulus diaphanus</i> .....	30	<i>Manta birostris</i> .....	20

	PAGE		PAGE
<i>Melanogrammus aeglefinus</i> . . . . .	34	<i>Prionotus carolinus</i> . . . . .	70
<i>Menidia beryllina</i> . . . . .	42	<i>Prionotus evolans</i> . . . . .	70
<i>Menidia menidia</i> . . . . .	42	<i>Pseudopleuronectes americanus</i> . . . . .	39
<i>Menticirrhus saxatilis</i> . . . . .	65	<i>Pseudopriacanthus albus</i> . . . . .	60
<i>Merluccius bilinearis</i> . . . . .	33	<i>Pungitius pungitius</i> . . . . .	44
<i>Microgadus tomcod</i> . . . . .	34		
<i>Micropogon undulatus</i> . . . . .	64	<i>Raja eglanteria</i> . . . . .	17
<i>Micropterus salmoides</i> . . . . .	85	<i>Raja erinacea</i> . . . . .	17
<i>Mola mola</i> . . . . .	80	<i>Raja garmani</i> . . . . .	17
<i>Monacanthus hispidus</i> . . . . .	78	<i>Raja laevis</i> . . . . .	16
<i>Morone americana</i> . . . . .	59	<i>Raja ocellata</i> . . . . .	17
<i>Mugil cephalus</i> . . . . .	43	<i>Raja radiata</i> . . . . .	18
<i>Mugil curema</i> . . . . .	43	<i>Raja senta</i> . . . . .	18
<i>Mullus auratus</i> . . . . .	74	<i>Remora brachyptera</i> . . . . .	73
<i>Mustelus canis</i> . . . . .	11	<i>Rhinoptera bonasus</i> . . . . .	19
<i>Myliobatis freminvilli</i> . . . . .	19	<i>Rhombochirus osteochir</i> . . . . .	74
<i>Myoxocephalus aeneus</i> . . . . .	67	<i>Roccus saxatilis</i> . . . . .	57
<i>Myoxocephalus octodecimspinosus</i> . . . . .	68	<i>Rypiticus bistrispinus</i> . . . . .	60
<i>Myoxocephalus scorpius</i> . . . . .	68		
		<i>Salmo salar</i> . . . . .	27
<i>Naucrates ductor</i> . . . . .	53	<i>Salmo trutta</i> . . . . .	85
<i>Neoliparis atlanticus</i> . . . . .	69	<i>Sakelinus fontinalis</i> . . . . .	27
		<i>Sarda sarda</i> . . . . .	47
<i>Oligoplites saurus</i> . . . . .	56	<i>Sarda velox</i> . . . . .	48
<i>Opisthonema oglinum</i> . . . . .	25	<i>Scomber scombrus</i> . . . . .	46
<i>Opsanus tau</i> . . . . .	77	<i>Scomberesox saurus</i> . . . . .	32
<i>Osmerus mordax</i> . . . . .	27	<i>Scomberomorus maculatus</i> . . . . .	49
		<i>Scomberomorus regalis</i> . . . . .	49
<i>Paragaleus pectoralis</i> . . . . .	12	<i>Scyliorhinus retifer</i> . . . . .	11
<i>Paralichthys dentatus</i> . . . . .	37	<i>Sebastes marinus</i> . . . . .	67
<i>Paralichthys oblongus</i> . . . . .	38	<i>Scleone vomer</i> . . . . .	56
<i>Paraxocotus mesogaster</i> . . . . .	32	<i>Seriola lalandi</i> . . . . .	54
<i>Parimurichthys perciformis</i> . . . . .	52	<i>Seriola zonata</i> . . . . .	53
<i>Peprilus alepidotus</i> . . . . .	52	<i>Sphacroides maculatus</i> . . . . .	79
<i>Perca flavescens</i> . . . . .	85	<i>Sphyaena borealis</i> . . . . .	43
<i>Peristedion miniatum</i> . . . . .	70	<i>Sphyaena guachancho</i> . . . . .	43
<i>Petromyzon marinus</i> . . . . .	7	<i>Sphyrna tiburo</i> . . . . .	14
<i>Pholis gunnellus</i> . . . . .	75	<i>Sphyrna zygaena</i> . . . . .	14
<i>Pneumatophorus colias</i> . . . . .	46	<i>Squalus acanthias</i> . . . . .	15
<i>Pogonias cromis</i> . . . . .	65	<i>Squatina dumeril</i> . . . . .	15
<i>Pollachius virens</i> . . . . .	35	<i>Stenotomus versicolor</i> . . . . .	61
<i>Pomatomus saltatrix</i> . . . . .	57	<i>Syngnathus fuscus</i> . . . . .	45
<i>Pomolobus aestivalis</i> . . . . .	24	<i>Synodus foetens</i> . . . . .	28
<i>Pomolobus mediacris</i> . . . . .	23		
<i>Pomolobus pseudoharengus</i> . . . . .	23	<i>Tarpon atlanticus</i> . . . . .	21
<i>Poronotus triacanthus</i> . . . . .	52	<i>Tautoga onitis</i> . . . . .	71
<i>Priacanthus arenatus</i> . . . . .	60	<i>Tautoglabrus adspersus</i> . . . . .	71
<i>Prionace glauca</i> . . . . .	13	<i>Thunnus thynnus</i> . . . . .	48

	PAGE		PAGE
<i>Torpedo nobiliana</i> .....	16	<i>Upeneus maculatus</i> .....	74
<i>Trachinotus carolinus</i> .....	56	<i>Urophycis chuss</i> .....	35
<i>Trachinotus falcatus</i> .....	56	<i>Urophycis regius</i> .....	36
<i>Trachurops crumenophthalmus</i> .....	55	<i>Urophycis tenuis</i> .....	35
<i>Trachurus trachurus</i> .....	55	<i>Vomer setapinnis</i> .....	55
<i>Trichiurus lepturus</i> .....	50	<i>Xiphias gladius</i> .....	50
<i>Tylosurus marinus</i> .....	31		
<i>Ukaria subbifurcata</i> .....	75	<i>Zenopsis ocellata</i> .....	41



## NOTE

- .12. Galeocerdo cuvier should read cuvieri.  
.47. Euthynnus alleteratus should read alletteratus.  
.48. Germo alalunga should read Thunnus alalunga.  
P. 69. Neoliparis should read liparis.  
P. 84. TABLE 2.  
Galeocerdo cuvier should read as P. 12, above.  
Raja eglenteria should read eglanteria.  
Citharichthys artifrons should read arctifrons.  
Euthynnus alleteratus should read as P. 47, above.  
Germo alalunga should read as P. 48 above.  
Neoliparis should read as P. 69, above.



## X. Photographs

PLATES 1 TO 77



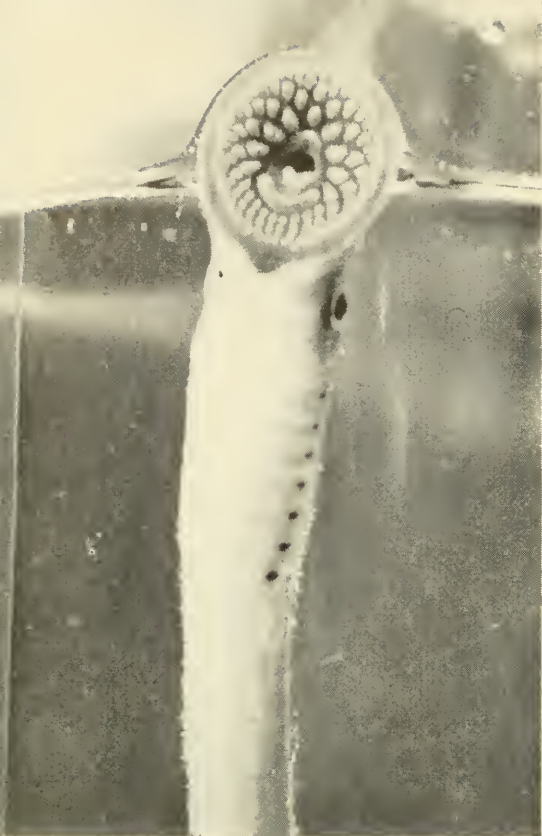


PLATE 1. Live sea lamprey captured in Block Island Sound by the author.

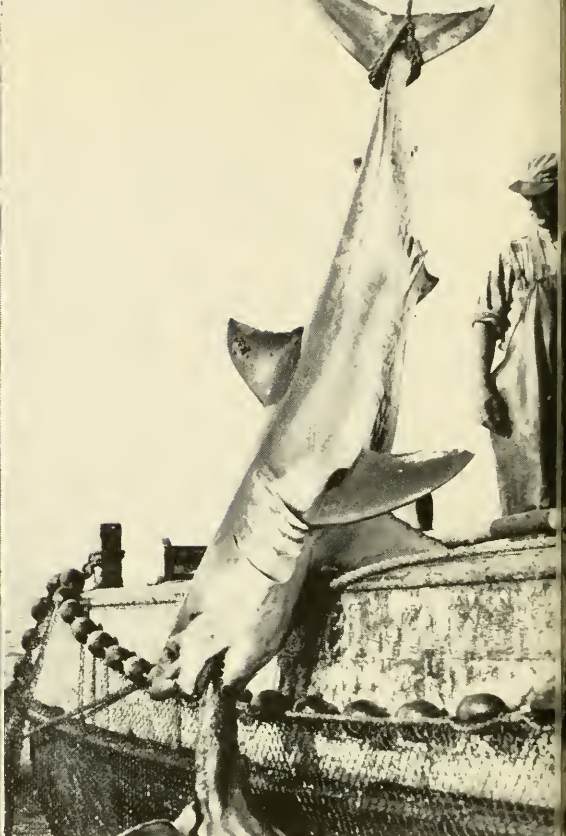


PLATE 3. A seven-foot maneater shark being hauled out of the Clark fish trap at Jerusalem, R. I. This large shark has bitten into the tail of an anglerfish.

PLATE 2. A remora attached to a mako shark. These sucker fish have also been found on swordfish, oceanic sunfish, whales and sea turtles.





PLATE 4. Maneater shark biting tail of anglerfish.

PLATE 5. Note the large mouth and pointed nose of this basking shark. This species of shark is the largest fish in North Atlantic waters and the second largest species in the world. Specimen captured at Point Judith, R.I., June 1956.







PLATE 6. Seven-foot thresher shark captured 4 miles SE of Watch Hill.



PLATE 7. Note the unusual head of this hammerhead shark. They are occasionally captured off Newport and Point Judith during the summer.

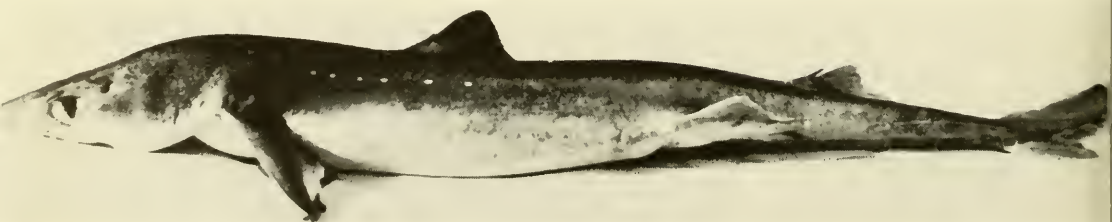


PLATE 8. The spiny dogfish is the most plentiful shark on our Atlantic coast. In Europe they find a ready market as a food fish.



PLATE 9. Holding up a monkfish or angel shark is Rowland Babbitt of Point Judith, R.I. The angel shark is very common off the British Isles and is an occasional visitor to New England waters.



PLATE 10. The barn door skate is the largest of the species found in New England waters, sometimes reaching lengths of five or six feet, and weighing around 35 pounds. It is also known as the winter or peck-nosed skate.

PLATE 11. The topside of a stingray is mottled brown to blend in with the bottom. The stingray has a habit of lying partially submerged in the mud at the bottom of shallow tidal bays and estuaries. Bathers are apt to step on such a stingray without seeing him and receive a painful wound.

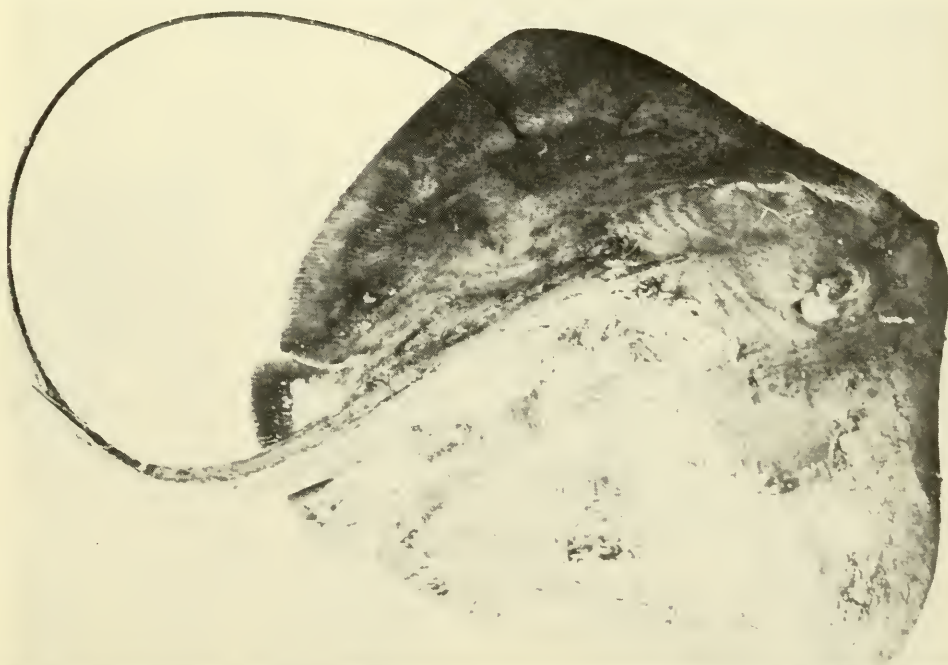




PLATE 12. Cow-nosed ray taken in Point Judith, R.I. traps. Note knife-like spine at the base of the tail.

PLATE 13. A mermaid's purse is actually the discarded egg case of a skate. Also known as "mermaids' pin cushions", the cases are frequently picked up among patches of sea weed.



PLATE 14. The 126-lb. sturgeon which was taken 7 miles up the Pawcatuck River on the Conn.-R.I. border. Frank Muoio of Westerly, R.I. stands with his two companions who helped subdue the big fish with eel spears.





PLATE 15. Trawler filled with sea herring taken off Southern R.I. coast in February.



PLATE 16. The shad, largest American member of the herring family, can easily be recognized by its oval shape, bluish green back and distinctive silver colored belly.

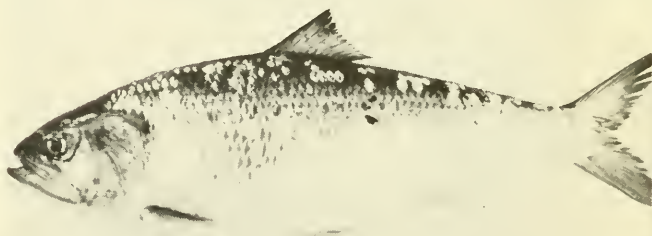


PLATE 17. Menhaden or bonyfish.





PLATE 18. Smelts fresh from the Pawcatuck River.



PLATE 19. Captain Prentice Lamphere of Watch Hill, R.I., a commercial and sport fisherman for over 50 years demonstrates the proper way to pick up a live eel.

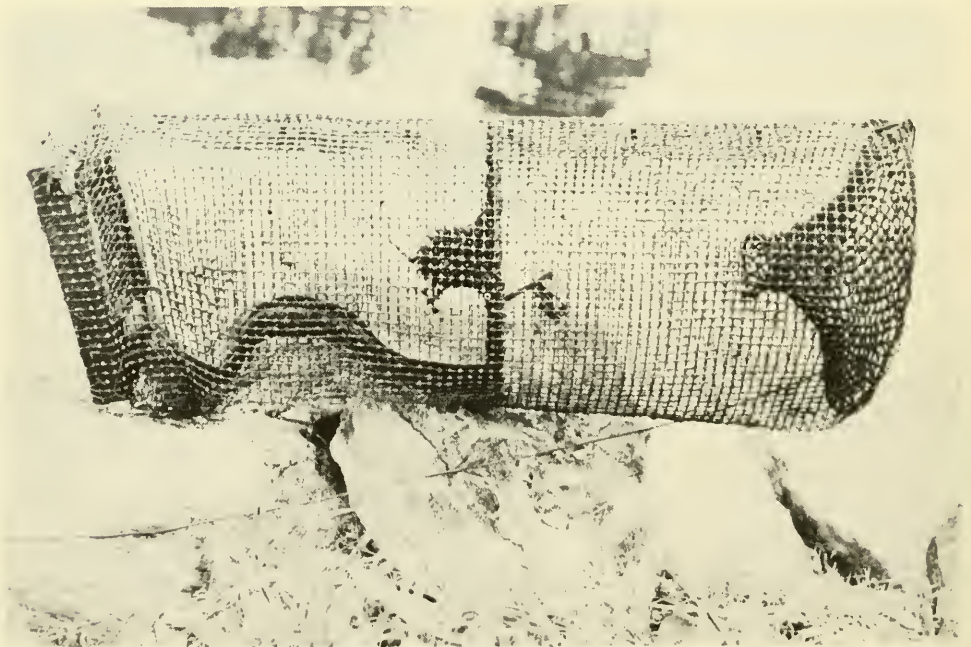


PLATE 20. A double funnel eel trap with eel inside.



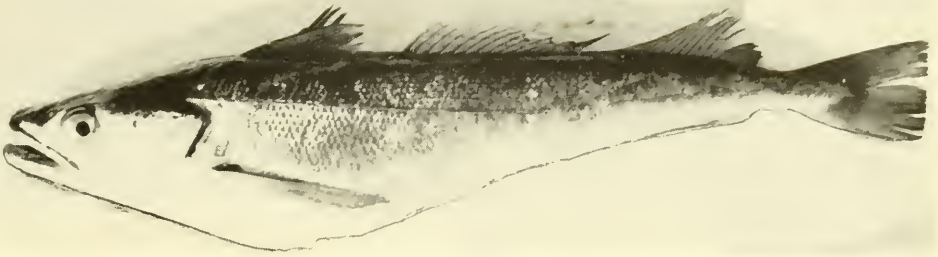
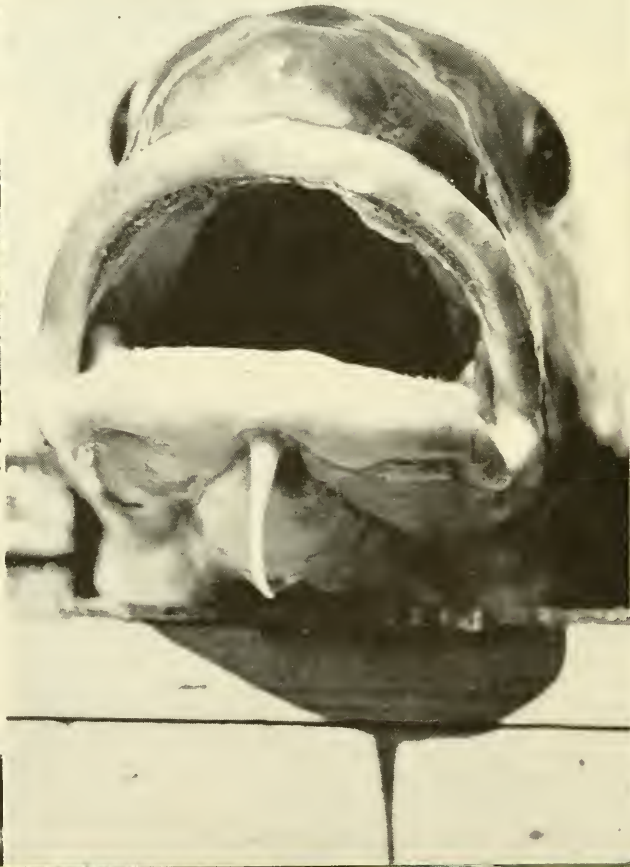


PLATE 21. Whiting, sometimes called silver hake or frostfish.

PLATE 22. Twenty pound cod taken at Point Judith.



PLATE 23. Head of codfish. Cod have been known to swallow ducks, books, boots and oil cans.



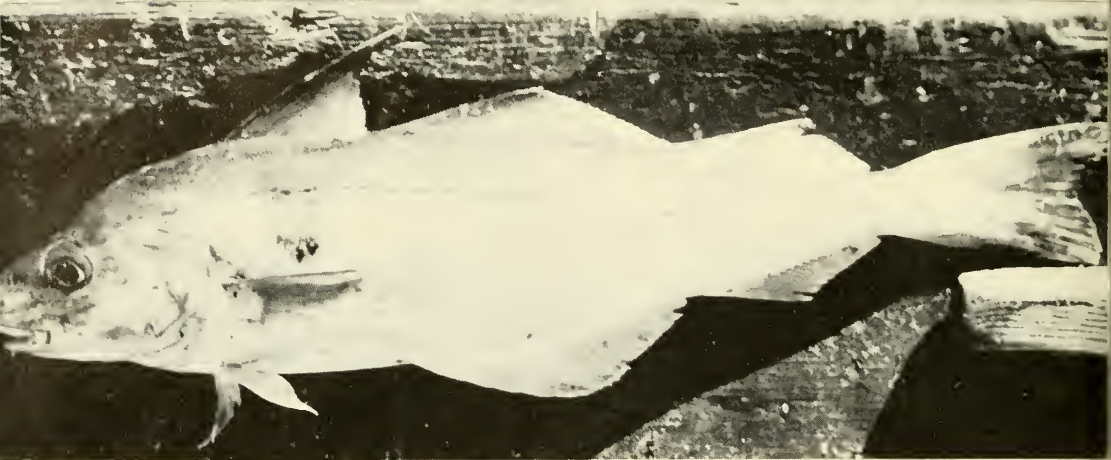


PLATE 24. Haddock from Block Island Sound.

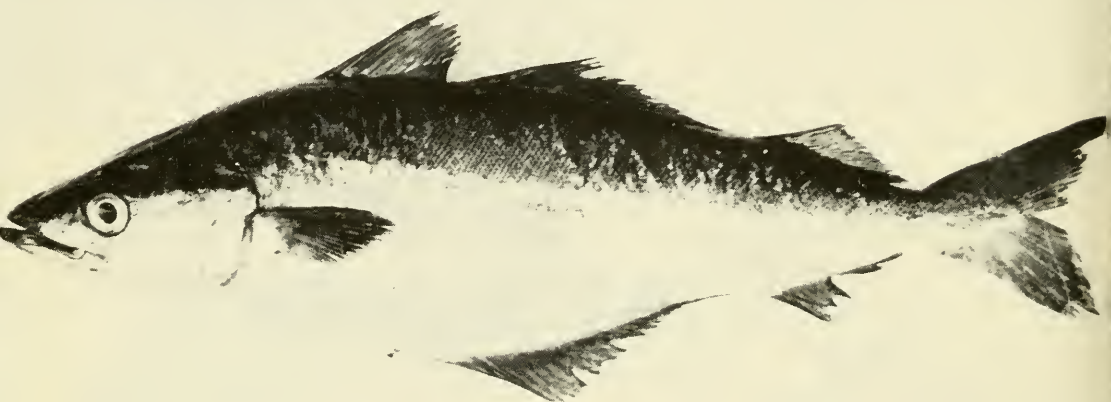


PLATE 25. The pointed, tapering head of the pollock provides additional speed for the fish as it glides through the water in search of small bait fishes to feed on.

PLATE 26. A mature squirrel hake. Baby hake of this species from one to two and a half inches long have been recorded as living inside the shells of large sea scallops for safety.



PLATE 27. A 12-lb. doormat fluke or summer flounder is held by Gardner Caswell a crewman on the fish trap boat *Wilmar* which operates out of Snug Harbor, R.I.



PLATE 28. A yellowtail flounder which can easily be distinguished by the yellowish color of its tail fin.

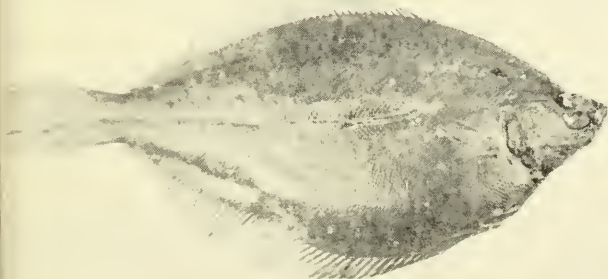


PLATE 29. A blackback or winter flounder which is smaller mouthed than the fluke and is right handed with eyes on the right side.

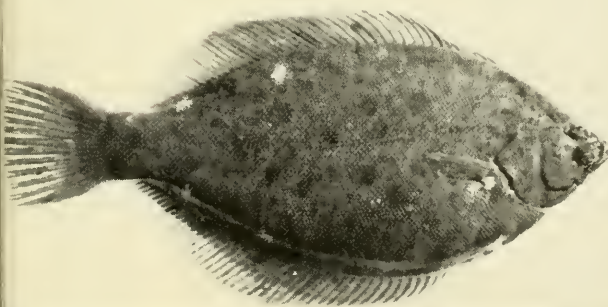




PLATE 30. A sand dab or windowpane flounder. These have very little market value and are usually put in with the fish for reduction.

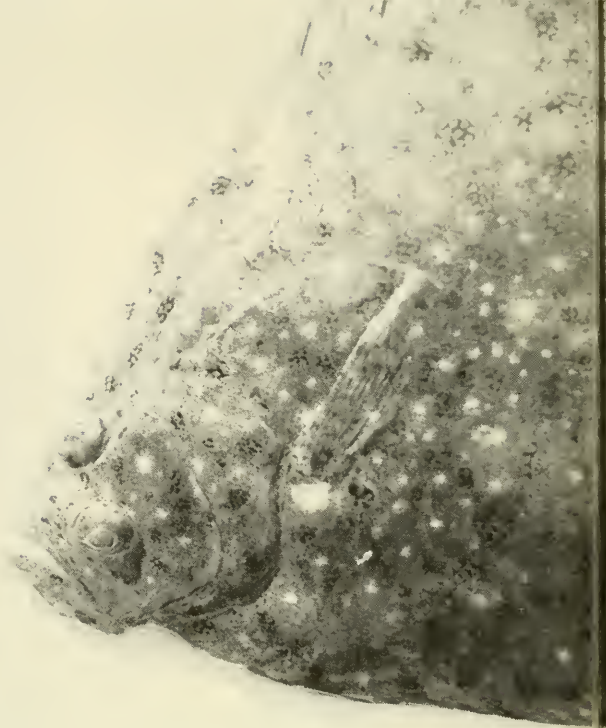


PLATE 31. The American John Dory. The large dark spot is believed by some superstitious fishermen to be a result of the thumbprint of Saint Peter.

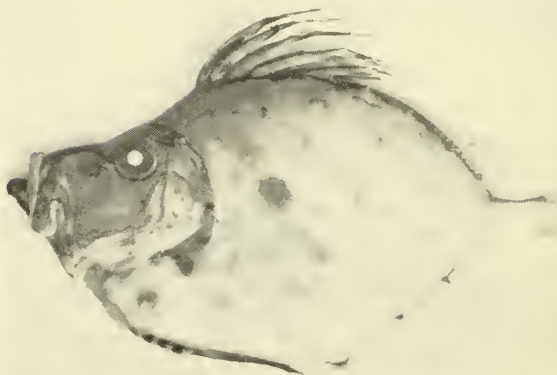


PLATE 32. Photograph of a 5½-inch snipefish from off Block Island.



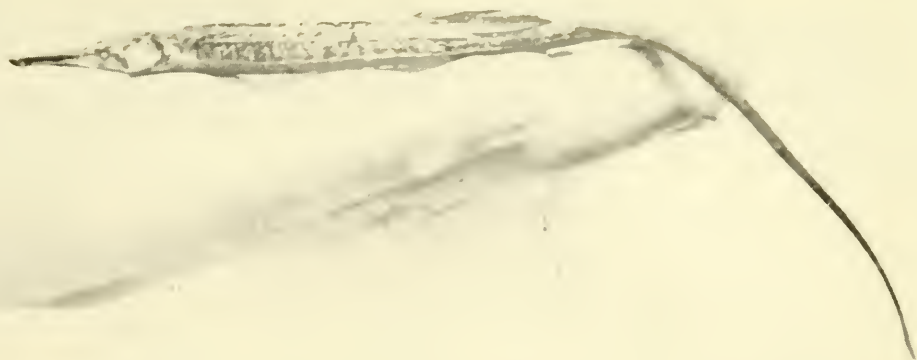


PLATE 33. Pipefish are one of the queerest looking species along our Atlantic coast. They are able to swim in either a vertical or horizontal position and are usually 4 to 8 inches long occasionally reaching a length of 12 inches.



PLATE 34. Northern seahorse.

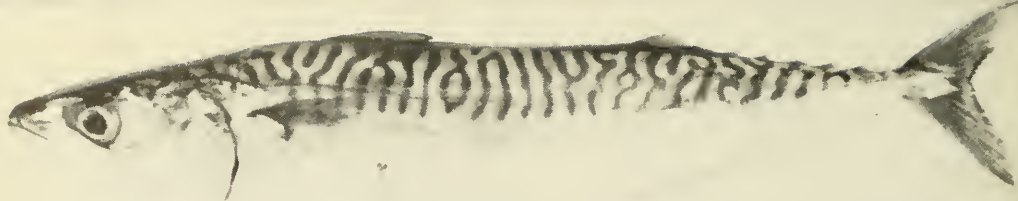


PLATE 35. A tinker mackerel.

PLATE 36. The streamlined bonito reaches a length of three feet and a weight of twelve pounds. Its powerful tail propels the bonito fast enough to capture swiftly moving mackerel and flying fish.

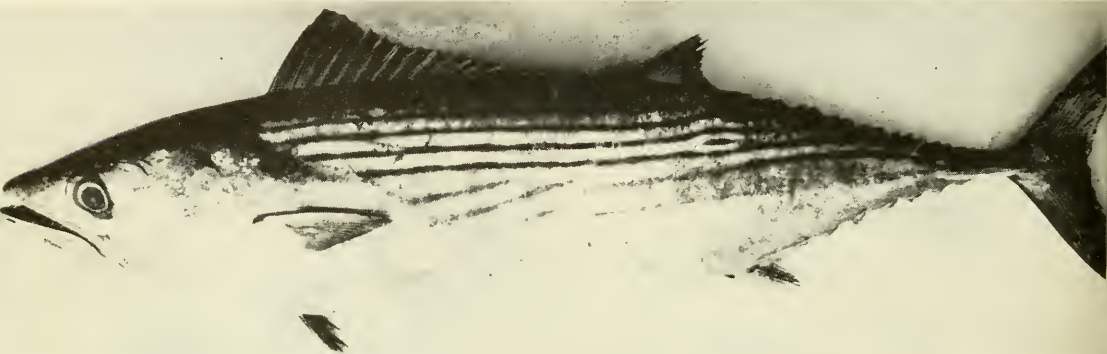


PLATE 37. A 650-lb. tuna comes ashore at Point Judith, R.I.





PLATE 38. A large white marlin taken in Rhode Island waters off Block Island. White Marlin are the smallest members of the marlin family.

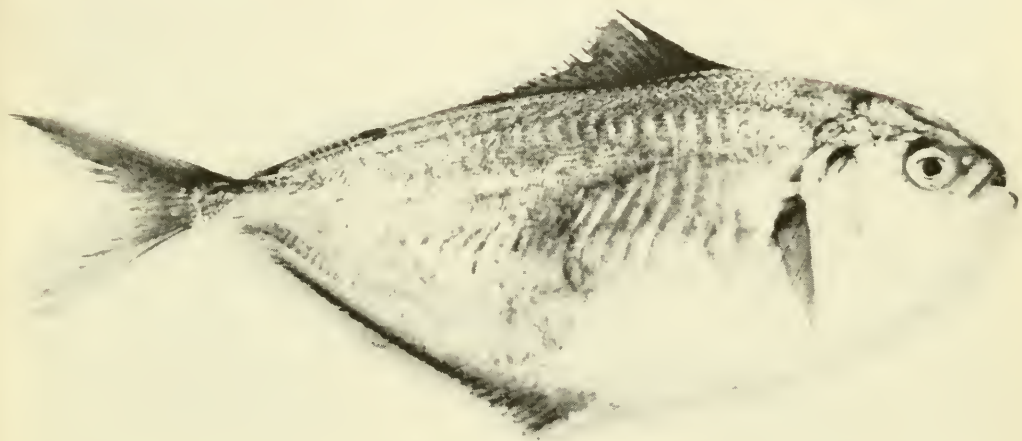


PLATE 39. A native eleven inch butterfish. Note the small jaws and pointed pectoral fin which are distinctive features of this species. Their color is a greyish blue on the sides with a silvery line on the belly.

PLATE 40. The dark vertical stripes are a distinctive characteristic of the pilotfish.





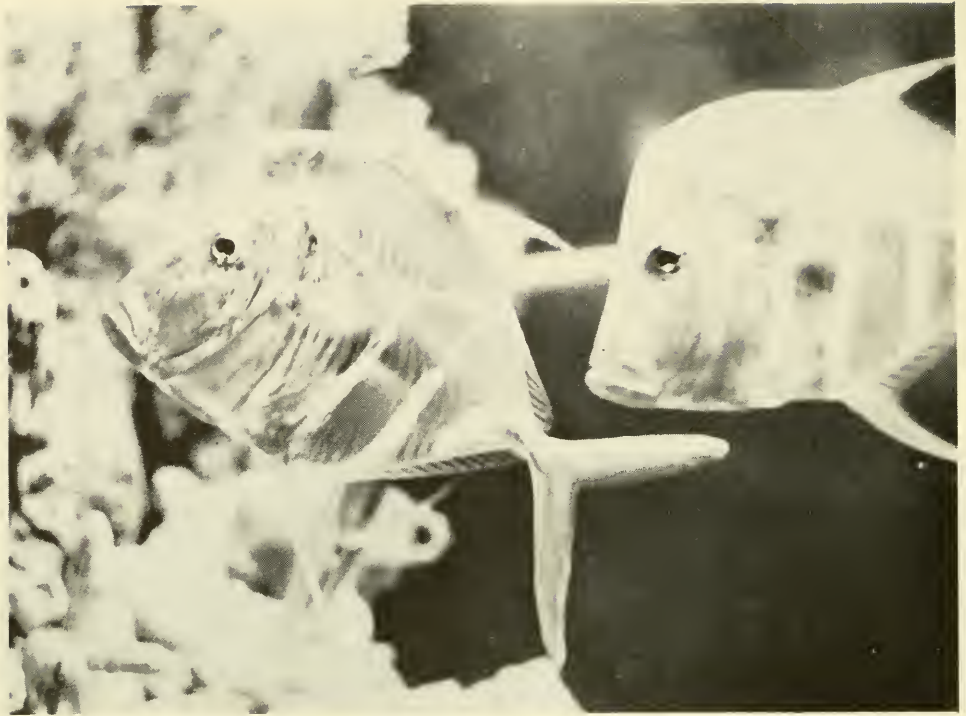


PLATE 41. Lookdowns which stray into Rhode Island waters during summer months.



PLATE 42. Threadfin from Newport.

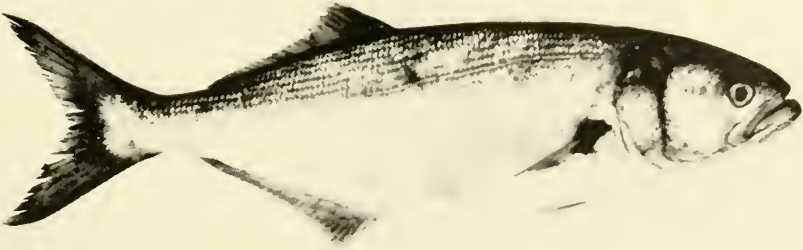


PLATE 43. The fast bluefish has a streamline form which enables it to speed through the water attacking almost any fish in its path. Its name is derived from its greenish blue color.



PLATE 44. Head of bluefish.



PLATE 45. Jack Grant with 36 and 44 pound stripers taken surf-casting with squid at Watch Hill.



PLATE 47. Captain Manuel Pavis and 48-lb. striper taken in Little Narragansett Bay.

PLATE 46. These 11 striped bass were taken trolling one evening off Watch Hill, R. I.







PLATE 48. The spines on the sea bass are very sharp and can cause a great deal of pain if they stick in your hand.

PLATE 49. A rare southern species which strays into Rhode Island waters in late summer and fall is the deep big-eye, *Pseudoprincauthus altus*.

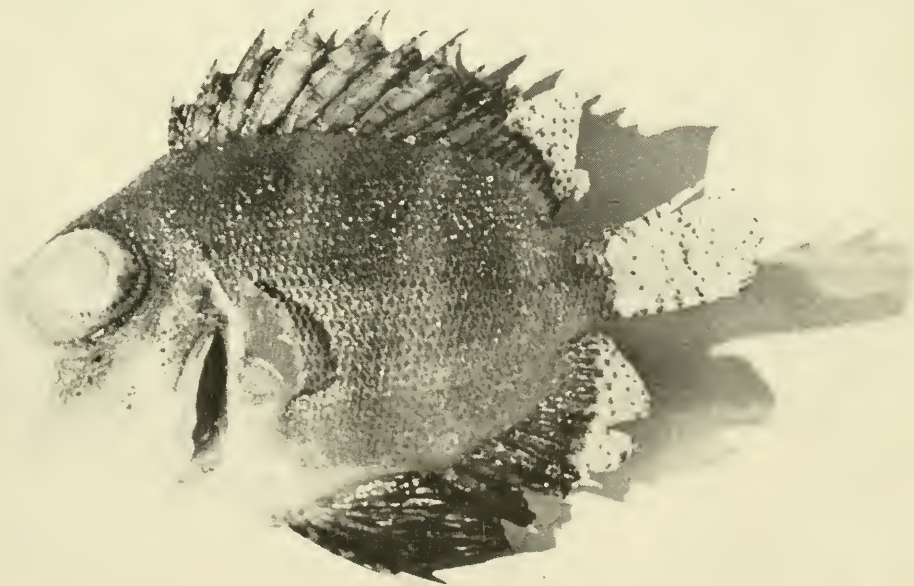




PLATE 50. Portrait of a scup.

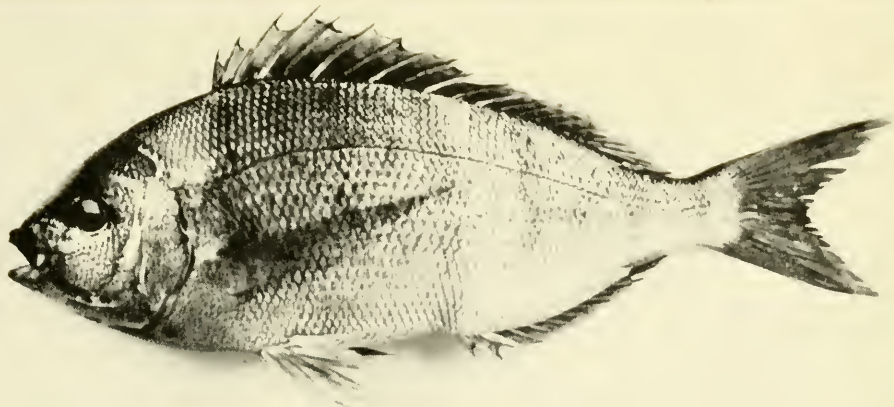


PLATE 51. Record sized pinfish, 14.25 inches (362 mm.) TL. From Point Judith on June 8, 1955.

PLATE 52. Sometimes weakfish are known as chickret, sea trout, grey trout or drummer. This speckled salt water fish is highly regarded by anglers.

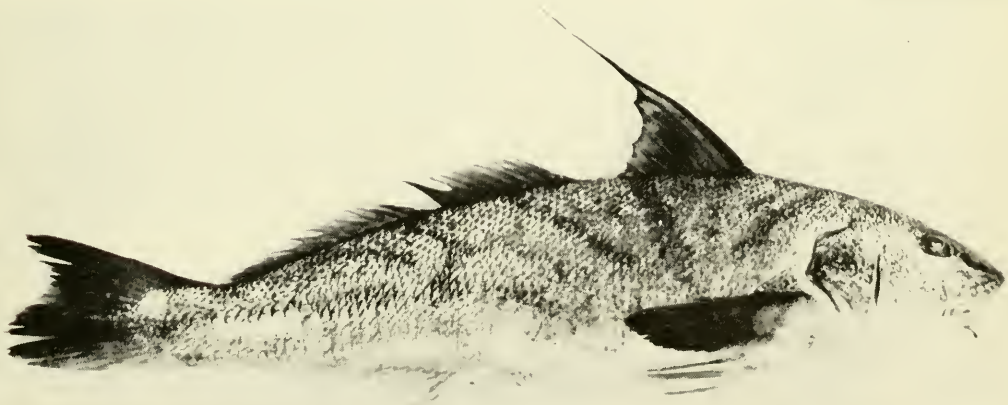


PLATE 53. The kingfish is an unusually tasty fish which is related to the weakfish, drum and croakers.





PLATE 54. Tilefish at Point Judith Fisheries, Pt. Judith, R.I. Large amounts of tilefish are landed each year in Rhode Island, these being taken out by the Gully off Block Island. This fish is brilliantly colored with hues of yellow, rose, blue, purple, green and pink.

PLATE 55. Head of tilefish.



PLATE 56. Boar fish from off Block Island. 57 mm. total length.







PLATE 57. Ugly sea raven.

PLATE 58. Professor Donald Zinn and Author inspect record lumpfish at Univ. of R.I.





PLATE 59. Record lumpfish, *Cyclopterus lumpus* weighing 21 pounds, 4 ounces caught off the Rhode Island coast on March 21, 1953.



PLATE 60. A large striped sea robin. Note the large fanlike pectoral fins which resemble bird wings.



PLATE 61. Flying gurnard from Little Narragansett Bay.



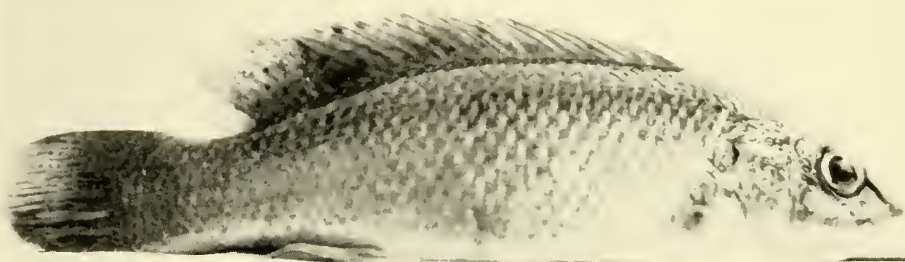
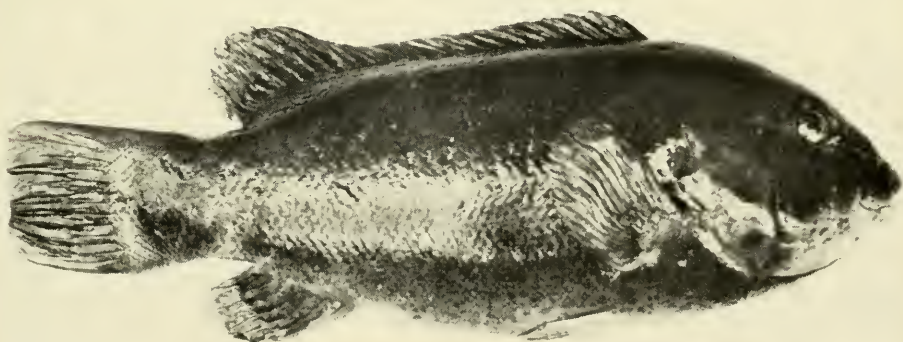


PLATE 62. Known as bergall, chogset, nibbler and cunner, this little fish can provide a very tasty fish chowder.



PLATE 63. A 16-lb. blackfish speared at Watch Hill by Kenneth Parrilla.

PLATE 64. One of the blackfish's haunts is along rocky shores where it chomps up crabs and mussels with powerful jaws.



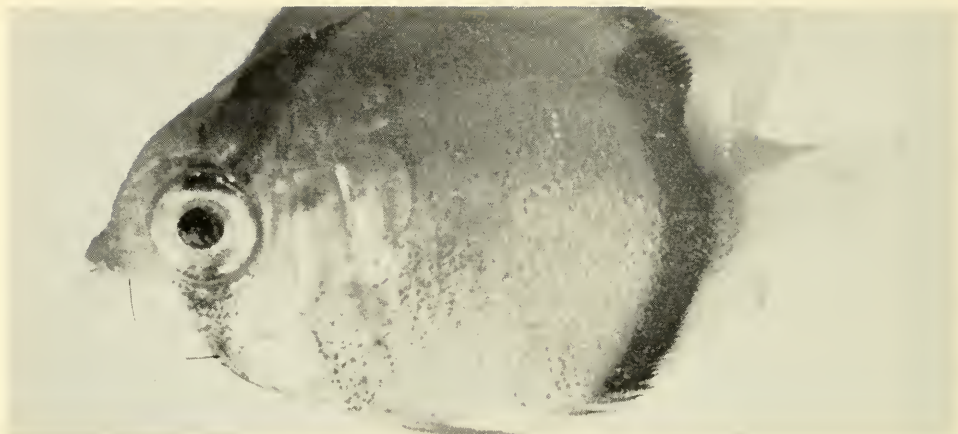


PLATE 65. Butterfly fish with a total length of 22 mm. From Weekapaug, R.I.

PLATE 66. Full length view of remora.

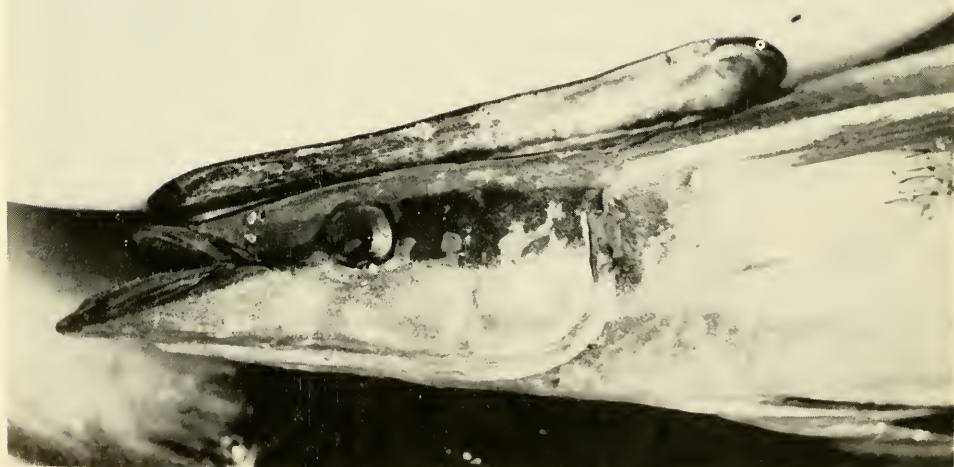
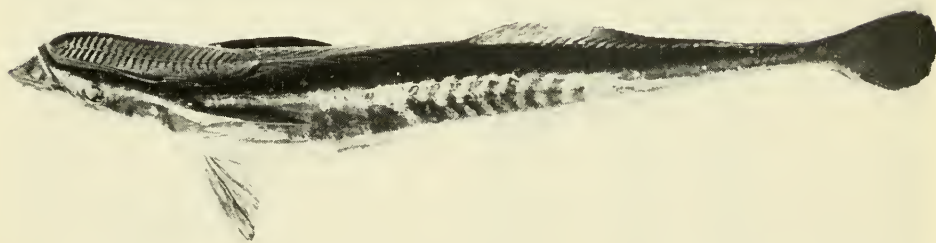


PLATE 67. Close-up of the suction disk in action. The remora is attached with such tenacity that it would take a pull of over twenty pounds to dislodge it.

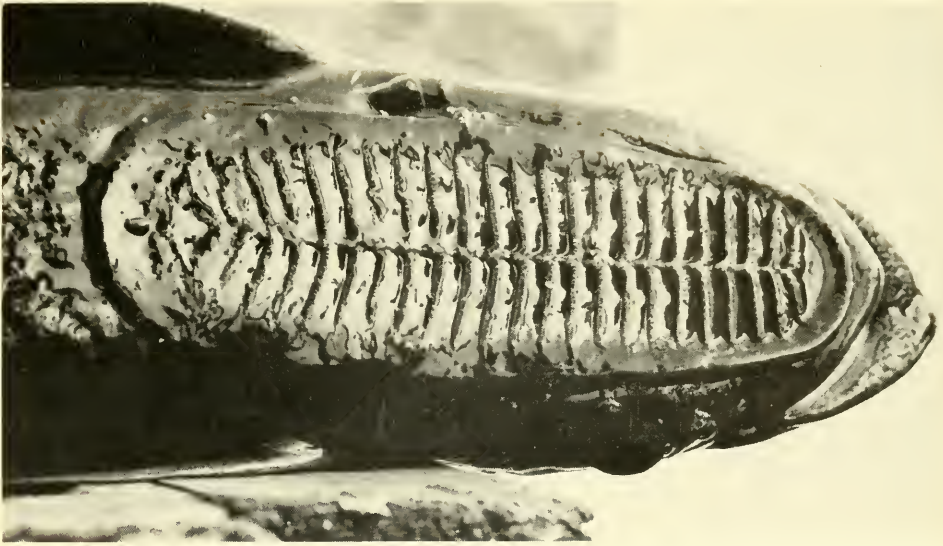


PLATE 68. Close-up of the sucking disk of a remora just after it had been removed from a mako shark. Note the serrated edges of the cartilaginous ridges or laminae. The remora attaches itself to a large fish by a slight raising of the ridges creating a series of vacuum chambers between itself and the fish.



PLATE 69. Congo eel or ocean pout easily identified by big lips, high eyes and conical teeth.



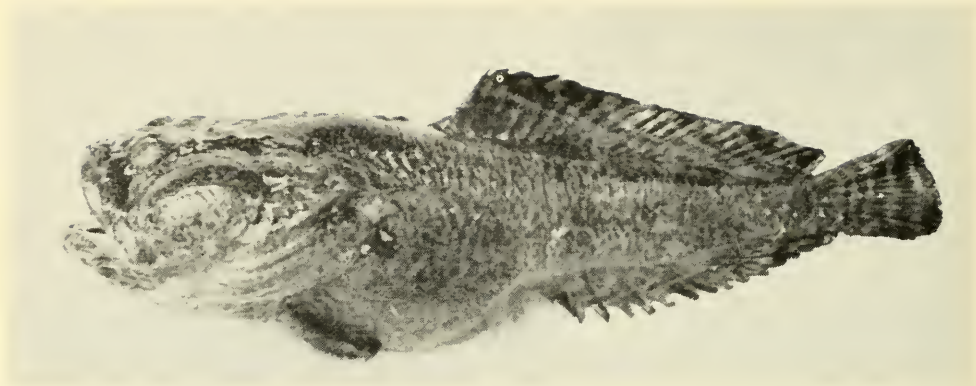


PLATE 70. The toadfish which hibernates in the mud during the winter.



PLATE 71. Orange filefish taken at Napatree Point by a spear fisherman.

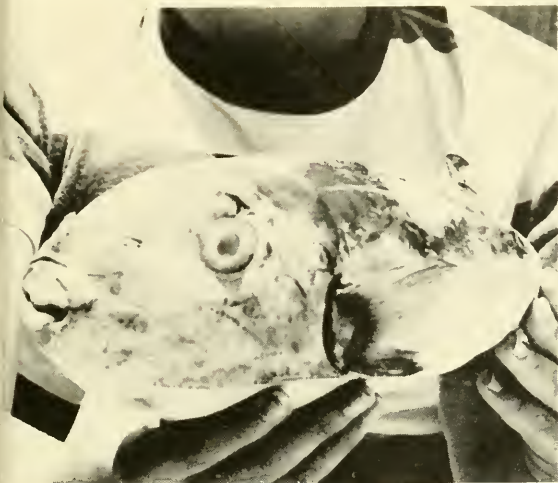


PLATE 72. From its oblong shape it is easy to see why the smooth puffer is called "bottle fish".



PLATE 73. If you examine a blowfish closely you will find that they do not have true scales only small spines. Also they do not have any true teeth. What appear to be teeth in the mouth are the edges of the upper and lower jaws.



PLATE 74. A pen of inflated swellfish or blowfish on a fishing boat. Commercial fisherman call blowfish in this condition "snowballs".



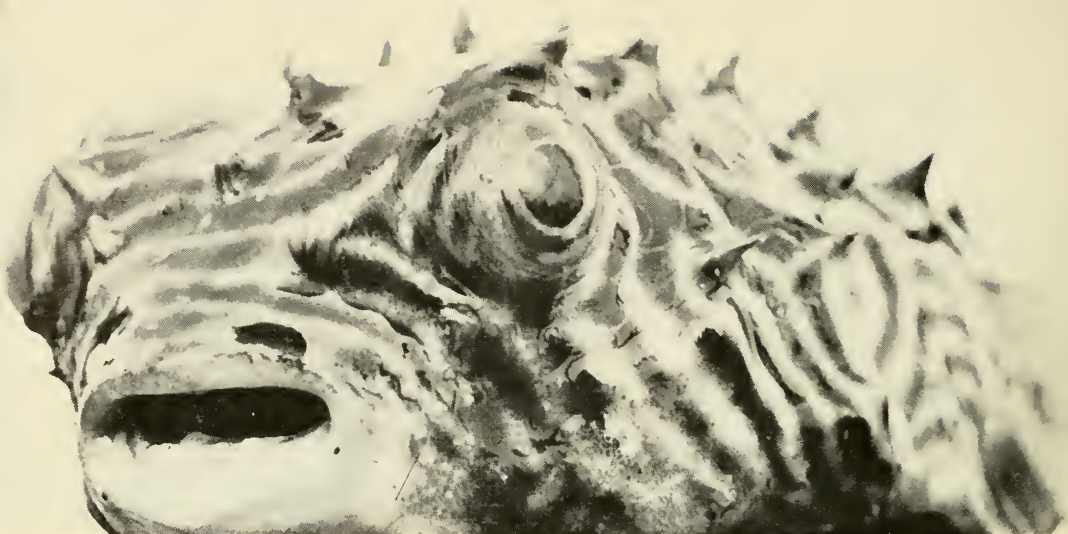


PLATE 75. The burrfish can be identified by its thorny spines, like a coat of armor, and its bulging eyes and wavy stripes. He is a common visitor to New England waters during the summer.

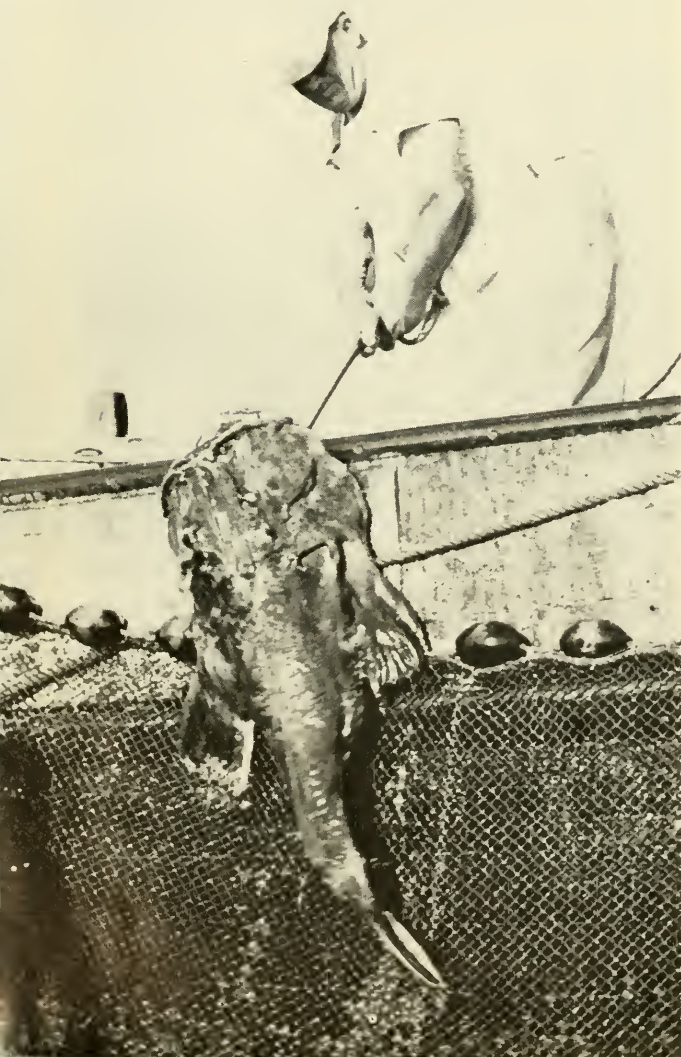


PLATE 76. Hauling aboard a large anglerfish from the fish trap at Point Judith, R.I.



PLATE 77. Author examining a black ruff.



## Profile of the Author

Educator, marine biologist, and writer . . . . the author of this volume has had articles appear in many national periodicals, including: *Natural History Magazine*, *The Biologist*, *Sea Frontiers*, *Nature Magazine*, *Frontiers*, *Outdoor Life*, *Maine Coast Fisherman*, *Salt Water Sportsman*, *Fishing World* and others. He has studied at the University of Rhode Island, Brown University and the University of Massachusetts and has taught biology four years at Rhode Island College, formerly called the Rhode Island College of Education.

Following his interest in ichthyology the author is a member of the American Association of Ichthyologists and Herpetologists, American Fisheries Society, Society of Systematic Zoologists, Ecological Society of America, National Association of Biology Teachers, International Oceanographic Foundation, Sigma Xi and Phi Sigma scientific societies. He presented a paper on the fishes of Rhode Island at the 1958 annual meeting of the American Association for the Advancement of Science in Washington, D. C. Serving as a member of the board of directors of the Rhode Island Wildlife Federation, the author has taken an interest in conservation projects throughout Rhode Island. He is 28 years old, married, and resides in Westerly, Rhode Island.

This is a limited first edition of 1000 copies produced by Waverly Press, Baltimore, Md., on 70 lb. Mead Richgloss offset enamel, text set in 11 point Monotype Bruce Oldstyle, with Baskerville display. Design by Robert J. Daily.











